

REVIEW AND APPROVALS

DESOTO NATIONAL WILDLIFE REFUGE

Missouri Valley, Iowa

ANNUAL NARRATIVE REPORT

Calendar Year 1992

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Project Leader	Date	Wildlife Associate Mgr.	Date

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Regional Office Approval	Date

## INTRODUCTION

DeSoto National Wildlife Refuge is located midway between the farming communities of Blair, Nebraska, and Missouri Valley, Iowa, on U. S. Highway 30. The refuge is situated astride the Missouri River, located approximately 20 miles north of Omaha, Nebraska. It lies in Harrison and Pottawattamie Counties, Iowa, and Washington County, Nebraska.

The refuge was established in 1958 to preserve habitat for migratory waterfowl. Acquisition was authorized by the Migratory Bird Conservation Act and Migratory Bird Stamp Act. It serves as a seasonal resting area for up to one-half-million waterfowl, primarily lesser snow geese and mallards. It has also become an important migrational and wintering area for up to 120 bald eagles.

The 7,823-acre refuge lies in the wide, fertile plain of the Missouri Valley Basin on the former meanders of the Missouri River. Portions of the refuge are characterized by cottonwood bottomlands. Approximately 2,400 acres are biologically managed as croplands under 11 cooperative farming agreements. Warm-season native grasses have been reestablished on about 450 acres to provide additional diversity.

The focal point for both man and wildlife is a former oxbow of the Missouri - the 788-acre DeSoto Lake. Recreational demand for its use has remained high since refuge establishment. The refuge provided active recreation throughout its early history, including fishing, picnicking, boating, waterskiing, and swimming. Approximately 16-million-dollars worth of facilities have been developed to accommodate public demand by up to 500,000 visitors annually. More recently, management emphasis has been redirected toward a more balanced program between man and wildlife, emphasizing wildlife-oriented recreation.

The 1968 excavation of the steamboat Bertrand, which sank in 1865, adds a major historical emphasis to the refuge program. The 200,000 artifacts in the Bertrand Collection provide one of the most significant assemblages of Civil-War-era artifacts from the Missouri River region. As such, it constitutes a national time capsule and a regional attraction.

In 1981, the DeSoto Visitor Center was opened. The visitor center is the permanent home of the Bertrand Collection. The five-million-dollar, 26,000-square-foot building contains exhibits interpreting the importance of the Bertrand as part of the historical development and ecological change that occurred within the Missouri River Basin. In addition to environmentally, controlled artifact storage and museum exhibit areas, the building houses a laboratory for artifact treatment, a collection records area, and a reference library.

The visitor center also provides exhibits depicting the natural history of the area and its wildlife. Viewing galleries overlooking DeSoto Lake provide excellent opportunities to observe waterfowl and bald eagles during the spring and fall migration periods. A variety of complex audio and audio-visual equipment provide effective interpretations to an average of 170,000 visitors who pass through the center each year.

# DE SOTO NATIONAL WILDLIFE REFUGE



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## A. HIGHLIGHTS

Generally, mild weather prevailed, with precipitation a little above normal. Section B.

The refuge deer study continues to provide interesting data. Section D.5.

A DeSoto volunteer was featured nationally. Section E.4.

DeSoto received record goose use days. Section G.3.

Many changes were implemented in the cooperative farming program, and a 104-acre native prairie was established on the former Sludge Demonstration Site. Section F.4. and F.5.

The fall auto tour was completely revamped and a new overlook developed. Section H.5. and I.1.

The refuge headquarters was condemned and the staff moved into temporary quarters. Section I.1.

Good progress made on Missouri Chutes Refuge planning, with Boyer Chute becoming a reality, and Blackbird Bend now a concept. Section J.1.

Lots of VIP's passed our way. Section J.3.

## B. CLIMATIC CONDITIONS

### 1992 WEATHER DATA DESOTO NATIONAL WILDLIFE REFUGE

Month	1992	Precipitation (inches)*		1992 Temperatures(°F)	
		Average**	Snowfall	Max.	Min.
Jan.	1.25	0.97		57	-06
Febr.	0.92	0.87		68	10
March	3.61	2.42		79	12
April	3.62	3.01	10.0	97	20
May	1.24	3.96		91	34
June	1.63	4.17		90	55
July	6.44	3.51		90	53
August	1.64	3.43		91	47
Sept.	3.78	3.84		87	37
Oct.	4.25	2.44		90	20
Nov.	2.95	1.44	10.0	61	17
Dec.	1.35	1.25	6.0	47	03
TOTALS	32.28	31.31	26.0	97	-06

\* Includes snowfall.

\*\*30-year average, 1963-1992.

January temperatures ranged from a minus-six degrees to a high of 57 degrees. Some moisture fell as 1.25 inches of rain, but no snow. Very mild weather, near month's end, resulted in rutted roads. Roughly, 25,000 geese remained, but out of public view.

February temperatures ranged from 10 degrees to a high of 68. Only 0.92 inches of rain fell. The weather was unusually mild for February. Major movements of waterfowl were seen as early as the 14th.

March temperatures ranged from 12 degrees to a high of 79. A total of 3.61 inches of rain fell, but weekend weather was nice throughout the month.

April's weather was diverse. Temperatures ranged from 20 degrees to the year's high of 97 degrees. A major late snowstorm dumped about 10 inches of snow on the 20th, and caused considerable limb damage, especially along northern borders of woodlots. Total precipitation for the month was 3.62 inches.

Temperatures ranged from 34 degrees to a high of 91, but it was generally a very cool May. Precipitation for the month only totalled 1.24 inches, but cropland planting got off to a slow start due to carry-over wet conditions. And, DeSoto Lake rose a foot above the planned elevation.

Temperatures ranged from 55 degrees to a high of 90 in June. Precipitation for the month only totalled 1.63 inches, the driest June in 20 years, the ninth driest ever recorded. May and June go into the local record books as the driest May-June period in 34 years.

July was cool and wet. Rain fell on 18 days, and temperatures ranged from 53 degrees to a high of 90. Precipitation for the month totalled 6.44 inches (Omaha received 9.66 inches, a 108-year record). All the rain was welcome, but the hail and severe weather that accompanied it damaged some local crops.

August brought 1.64 inches of precipitation, including a couple rainy weekends. Temperatures fluctuated from 91 degrees down to 47 degrees, a really cool, enjoyable month. Whatever happened to 106 degrees in the shade?

September was cool and wet, with 3.78 inches of rain. Temperatures fluctuated from 37 degrees up to 87 degrees. Water was standing in the corn fields.

October was wet, with 4.25 inches of rain. Temperatures fluctuated from 25 degrees up to 90 degrees. Autumn colors extended throughout the month, an unusual event, and the fall harvest was severely delayed.

November brought two rainstorms, a 3-inch snowstorm, and occasional flurries, totalling 2.95 inches of precipitation. Temperatures fluctuated from 17 degrees up to 61 degrees. The wet weather kept

several refuge farmers from completing their harvest. Local corn harvesting was delayed, with 22 to 25 percent-moisture corn remaining in the fields. Goose feeding was widely distributed throughout the valley.

December brought occasional snow flurries and several ice storms. Precipitation totalled 1.35 inches. Temperatures fluctuated from a high of 47 degrees to a low of minus-three degrees on the 31st. The local corn harvest continued to be hampered, with up to 10 percent with still standing in snow-covered croplands.

In summary, it was a cool and fairly wet year. The mild summer temperatures were quite enjoyable. Overall, total rainfall for the year was a little above normal at 32.28 inches. And, DeSoto Lake remained high throughout the summer and fall, with little evaporation, due to frequent precipitation and mild temperatures.

### C. LAND ACQUISITION

#### 4. Farmers Home Administration Conservation Easements

DeSoto's Fish and Wildlife Management District responsibility within 21 counties in western Iowa (as well as assisting Region 6 in a minor role in northeastern Nebraska) is to screen FmHA properties for significant wildlife resources and propose conservation easements on desirable habitat. If, and when, these easement proposals are accepted by both FmHA and the Service, the tracts will then be managed as part of the National Wildlife Refuge System.

On July 17, 1992, the Federal Register published the long-awaited final rule on the changes to the FmHA easement program. This delay considerably reduced the normal workload of FmHA easement reviews, surveys, exhibit writing, and proposals during the year. Therefore, only two FmHA properties in two different counties were reviewed. Both of these properties were pre-inventory requests, which gives FmHA the option, once they find out our interest in the property, to not offer us the opportunity to propose an easement as an inventoried property.

The 48.4-acre Gary James property within Adams County lies adjacent to Lake Icaria State Park, which could have offered an excellent opportunity to cooperate with Iowa Department of Natural Resources in restoring this floodplain, to reduce the lake's historically severe sediment problems. However, this was a pre-inventory request and FmHA decided to bypass offering this property as an easement. Thus, a Marshall's Sale was held on October 20th and the property was sold to a local hog farm operation.

In October, Refuge Operations Specialist Van Riper inspected the 160-acre L. Acker property in Cass County, which was another pre-

inventory request. After SCS changed their wetland delineation on a portion of this property, a 58.5-acre easement was proposed in November. Documentation of FmHA's pre-inventory requests are being recorded at the request of the Private Lands Office in the Regional Office, to inform Washington of FmHA's disregard for proposals.

The new fiscal year brought changes about when reviewing FmHA property requests. Refuge Operations Specialist Van Riper attended the first Iowa meeting involving this team approach, with personnel representing FmHA, ASCS, and SCS in October.

The following table is a complete listing of proposed FmHA easements through 1992.

FmHA Easement Status Report

<u>Former Owner</u>	<u>County</u>	<u>Date Proposed</u>	<u>Date Accepted</u>	<u>Date Recorded</u>	<u>Posting Status</u>	<u>Acres</u>
*Anderson	Boone	06/88	11/88			61.0
*Showers	Decatur	07/88	02/89	03/90	Yes	15.6
*Buckingham	Decatur	07/88	02/89	12/89	1/2	41.8
*Bolen	Decatur	07/88	02/89	03/90	1/2	9.5
*Peirson	Decatur	07/88	02/89		No	10.5
McAlpin	Taylor	08/88	02/89		Yes	3.8
Thompson	Dodge, NE	11/88	06/89	06/90	Yes	47.5
Hildring	Lyon	07/89	04/90**		No	157.7
*Lauer	Madison	09/89	09/90		Yes	4.1
*Hughes	Madison	09/89			No	
Orr	Monona	08/90	****		No	27.5
Hunt	Pott.	06/89	02/90		Yes	29.0
*Cooper	Ringgold	11/89	Denied			
*Klommhaus	Ringgold	11/89	Denied			
Langstraat	Sioux	07/89	04/90	07/90	Yes	6.3
Bruck	Harrison	01/91	05/91		Yes	33.0
Riherd	Plymouth	12/89	Denied		No	115.0
Burson	Taylor	04/91	09/91		Yes	70.0
Barry	Harrison	04/91			Yes	47.02
Fichter	Fremont	06/91	Denied			
Dunbar	Page	06/91			No	
Pesley	Harrison	05/91	***		No	72.4
King	Taylor	04/91	07/91		Yes	32.0
Flanigan	Monona	12/91			No	230.0
						(est.)
Beason	Taylor	10/88	Denied			12.9
James	Adams	02/92	Denied			48.4
Acker	Cass	11/92				58.5

\*Transferred to Walnut Creek NWR District.

\*\*Transferred to State of Iowa.

\*\*\*Proposed Transfer to State of Iowa.

\*\*\*\*Pending title problem with Iowa DNR transfer, 12/2/91.

#### D. Planning

##### 4. Compliance with Environmental and Cultural Resources Mandates

For the record: the requirements resulting from the Office of Inspector General's 1989 report on the museum management program are approaching completion. The final requirement, a 100-percent inventory of the Bertrand Collection and relief of accountability for any missing artifacts through Board of Survey, will be completed in a few months. To date, approximately 85-percent of the objects have been inventoried (65,500 of 77,146 bags, boxes, and individual artifacts). M857-JB



An annual report was submitted to the National Advisory Council for Historic Preservation, following the requirements of our Comprehensive Collection Conservation Plan. This plan was required under provisions of Section 106 of the National Historic Preservation Act (16 U.S.C. 470f). Most of the success towards realizing elements of the plan were derived from a \$50,000 maintenance management system project, specifically directed toward the conservation of exhibited objects from the Bertrand Collection.

##### 5. Research and Investigations

The station's funded IPM study is included in Section F.4 as part of the croplands discussion.

DeSoto NR- 84 - "A Field Investigation to Evaluate the Impact of Various Sewage Sludge, Compost, and Commercial Fertilizer Land Applications on Refuge Wildlife, Soils, and Crop Production".

This study was completed in 1990 with the sixth and final cropping year on-site. At this time, a draft of the final report has been completed and is being finalized by the Rock Island Field Office. Expected completion date is April, 1993. The 104-acre site has been reverted to warm-season grasses - a large prairie tract which was envisioned as early as 1986.

DeSoto NR-91 - "Activities and Impacts of White-tailed Deer at DeSoto National Wildlife Refuge".

The goal of this project is to determine biological mechanisms of habitat selection, habitat use, and movements of white-tailed deer (*Odocoileus virginianus*) in and around DeSoto. The field work for this project has been completed by the primary researcher, Kurt VanCauteren, and the data are being analyzed. Changes in individual deer home ranges in response to seasonal change, agricultural activities, recreational activities (including hunting), and other stimuli are being determined. The importance of refuge areas as winter cover for midwestern deer also is being examined. Results and implications from this project will help federal and state land managers, as well as private landowners, to better manage deer populations.

The study has concentrated on the adult doe segment of the population, because deer adopt matriarchal social family groups that are lead by adult does. Seventy-five deer have been acquired through trapping, of which 32 were fitted with radio transmitters, and 43 with cattle-ear tags. An additional three adult does have been transmitter-equipped via remote chemical immobilization.

During the past two years, transmitter-equipped deer were located one to three times each day, and approximately 15,000 locations have been amassed. One doe has been tracked on 1,040 separate occasions...some sort of record by itself. Location data are being analyzed with the Map and Image Processing System (MIPS), Geographic Information System (GIS).

Fifty-four percent of transmitter-equipped deer were year-round residents of DeSoto NWR. Their home ranges averaged 55 acres in size, and they had a high degree of fidelity toward them. The other 46 percent moved out from the refuge, does in the spring and bucks in the fall. These deer had comparably-sized home ranges, which centered around narrow strips of permanent cover. Movements took place along riparian corridors, and ranged from two to 45 miles, averaging 14 miles. Several adult does were migrators, wintering on refuge and summering off. An implication of this is that these deer may be passing a matrilineal-based migration characteristic through generations.

Areas of winter refugia, like DeSoto, appear to be the key to sustaining and managing deer populations in this region. In addition to being population centers, they supply deer to surrounding areas. High deer densities in these wintering sites can severely impact agricultural crops and permanent vegetation, causing farmers problems and degradation of vital habitat. Findings imply that hunts in or around refuge areas should be conducted early in the fall, so harvested deer are those most



guilty of the damage, not those needed to annually replenish populations away from the wintering site. This not the current case at DeSoto.

The study of deer damage to field corn has been completed. The greatest amount of deer damage to corn occurred late in July. This also is the time that, when damaged, corn yield was affected the most. The major implication is that, if protected for this short period, the majority of losses due to deer damage can be avoided.

For the third consecutive year, a check station was conducted during the annual muzzleloader hunt. By collecting data on age, sex, and weight over a period of years, we are developing herd structure and condition trends. With another two or three years of data, we should be able to estimate the refuge's deer population using a sex-age-kill procedure.

Several odd occurrences have been observed during this study. A radio-collared doe was observed with her fawn one evening in September and the next morning, just 12 hours later, she was reported dead at Dodge Park, 14 miles downstream near Omaha.



A necropsy showed heavy contusions on this doe's back, but no side or leg scrapes. She obviously was hit by a boat or a barge while swimming the Missouri. But, why did she take to the river.... coyotes, dogs, insects, or maybe a pesky male fawn? Personal, KVC

Research activities have been supported by the Service, Nebraska Game and Parks Commission, the University of Nebraska-Lincoln, and the Nebraska Chapter of the Wildlife Society.

Results will be published and presented to both scientific and popular audiences. To date, publications and presentations related to this research include:

Hygnstrom, S., J. Hygnstrom, K. VerCauteren, N. Foster, S. Lembezeder, and D. Hafer. "Effects of Chronological Deer Damage on Corn Yields". Fifth Eastern Wildlife Damage Control Conference. 1991. p.65.

VerCauteren, K., and S. Hygnstrom. "Home Range and Movements of Female White-tailed Deer in DeSoto National Wildlife Refuge, Iowa". 54th Midwest Fish and Wildlife Conference. 1992. p. 107.

Lovallo, N., K. VerCauteren, N. Hedge, E. Anderson, and S. Hygnstrom. "A Comparison of Electronic Versus Hand-held Compasses for Telemetry Studies". Journal of Wildlife Management (1993, submitted).

VerCauteren, K. "White-tailed Deer Biology, Management and Research in the Midwest". Safari Club International. (1993, prepared).

VerCauteren, K. "White-tailed Deer Management and the Role of the Hunter". National Rifle Association. (1993, prepared).

VerCauteren, K. "White-tailed Deer in Nebraska: Biology, Management, and the Future". Nebraska Game and Parks Commission, Board of Commissioners. (1993, prepared).

VerCauteren, K. "Deer killed by boat"? Deer and Deer Hunting Magazine. (1993, submitted).

VerCauteren, K., and S. Hygnstrom. "White-tailed Deer Migration and Dispersal in the Eastern Great Plains Relative to Environmental Conditions". Journal of Great Plains Research (1993, in review).

VerCauteren, K., and S. Hygnstrom. "Habitat Use of Female White-tailed Deer in Relation to Crop Damage". 13th Great Plains Wildlife Damage Control Workshop. (1993, in preparation).

#### 6. Other

Manager Gage participated in planning for the Missouri Chutes refuges with Region 6 personnel, covered under Section J.1.

### E. ADMINISTRATION

#### 1. Personnel

<u>Name</u>	<u>Title</u>	<u>Grade</u>	<u>Status</u>
George E. Gage	Refuge Manager	GS-13	PFT
Terry A. Root	Sup. Refuge Op. Spec.	GS-12	PFT
Stephen Van Riper	Refuge Op. Spec.	GS-11	PFT
Bruce Weber (EOD 3/8/92)	Outdoor Rec. Plnr.	GS-11	PFT
James O'Barr	Museum Curator	GS- 9	PFT
Jeanne Harold	Museum Specialist	GS- 9	PFT



Melinda Sheets	Refuge Operations Spec.	GS- 9	PFT
Kenneth Jones	Law Enforcement Officer	GS- 7	PFT
David Reilly	Law Enforcement Officer	GS- 5	PFT
Randy A. Porter	Admin. Officer	GS- 9	PFT
Wanda Harbottle	Admin. Technician	GS- 5	PFT
Nellie Weldon	Clerk-Typist	GS- 4	PFT
Cindy Myer	Clerk-Typist	GS- 4	PFT
Joan Martin	Information Recep.	GS- 3	PPT
Barbara Nielsen	Information Recep.	GS- 3	PPT
Mark Cunard	Heavy Equipment Operator	WG- 8	PFT
Monty J. Storm	Automotive Worker	WG- 8	PFT
Kenneth E. Marquardt	Maintenance Worker	WG- 8	PFT
Robert Kraushaar	Maintenance Mechanic	WG- 9	PFT
(Retired 10/3/92)			
Loren Hinkel	Maintenance Helper	WG- 5	PFT
Susan Cooper	Tractor Operator	WG- 6	PFT



#### THE DESOTO TEAM - RISING ABOVE THE MIST OF MEDIOCRITY

First Row, L to R: Bruce Weber, Jim O'Barr, Ken Marquardt, Steve Van Riper, Mark Cunard

Second Row: L to R: David Reilly, Terry Root, Loren Hinkel, Chris Hall, Monty Storm, George Gage, Randy Porter

Third Row: L to R: Jeanne Harold, Nellie Weldon, Susan Cooper, Cindy Myer, Joan Martin, Mindy Sheets, Wanda Harbottle, Barbara Nielsen

Temporary Personnel

Kirk Coleman (Resigned 1/27/92)	Student Trainee (Biology)	GS- 4	PPT
Diamond Alexander (6/22/92 - 8/7/92)	Biological Aid	GS- 4	T
Christina Hall	Student Aid (PSIS)	GS- 1	TI

Personnel Activities

Kirk Coleman, Cooperative Education trainee, resigned from the Service in January to take a position with the Oakland Police Department in California.

Administrative Officer Porter was detailed to the Regional Office from January 21st - February 7th to assist Refuge's Budget and Administration Office.

Bruce Weber, Outdoor Recreation Planner, EOD on March 16th. Bruce came to the Service from the National Park Service at Isle Royale.

Wildlife Biologist Root was detailed as the station's Acting Supervisory Refuge Operations Specialist, effective May 17th.

Mark Cunard, Heavy Equipment Operator, received his ten-year pin in May.

Refuge Operations Specialist Sheets received a monetary Special Act Award in May for her assistance during the long absence of an Outdoor Recreation Planner at DeSoto.

Diamond Alexander, a temporary Biological Aid, began work on June 22nd, after attending the Career Awareness Institute at Tennessee Technological University. He was gainfully employed throughout the summer.

Wildlife Biologist Root was promoted to Supervisory Refuge Operations Specialist, effective June 28th, as Steve Van Riper stepped into the Private Lands Coordinator position.

In July, Administrative Officer Porter received his twenty-year pin.

Refuge Operations Specialist Sheets was promoted to the full GS-09 level of her position, effective August 24th.

Bob Kraushaar, Maintenance Mechanic for the visitor center, retired under the disability provision, effective October 3rd. Bob had a long bout with a massive brain tumor, and lost. He is our loss, too.

### Travel and Training

Supervisory Refuge Operations Specialist Van Riper attended an OPM Introduction to Supervision training course in Denver during the week of January 6th.

Project Leader Gage attended the WAM-JAM in Minneapolis during January 29-31st.

Refuge Officer Jones attended an armorer's training course at Marana near Phoenix, Arizona, during the week of February 4th.

Manager Gage participated in the annual Federal/State Coordination Meeting with Nebraska Game and Parks on March 4th.

Refuge Law Enforcement Officer Reilly attended FLETC training in Glynco, Georgia, from March 9th to May 13th, during one of our busiest seasons.

Heavy Equipment Operator Cunard attended pesticide applicator certification training on March 10th.

Administrative Officer Porter was detailed to Union Slough NWR by the Regional Office during March 11-13th.

Manager Gage and Outdoor Recreation Planner Weber travelled to Pottawattamie County's Camp Hitchcock to participate in a Golden Hills Resource Conservation and Development Association familiarization roundtable on March 18th.

Three of the station's law enforcement officers travelled to Des Moines, Iowa, for LE refresher training the week of March 23rd.

Wildlife Biologist Root attended a Bio-monitoring Workshop in Minneapolis during the week of March 30th.

Manager Gage attended the 57th North American Wildlife and Natural Resources Conference in Charlotte, North Carolina, from March 29 to April 1, and presented a paper on biofarming.

Supervisory Refuge Operations Specialist Van Riper attended a Private Lands training class held in St. Louis, Missouri, during March 17-18th.

Manager Gage attended WAM-JAM meeting at Ottawa NWR in Ohio during the week of May 11th, and snuck in some great walleye fishing!

Outdoor Recreation Planner Weber attended the Watchable Wildlife Committee meeting in the Regional Office during the week of May 18th.

Museum Specialist Harold attended the American Institute of Conservation Conference in Buffalo, New York, during the week of June 1st, and brought back lots of information and ideas.

Manager Gage attended an OPM Preretirement Counseling Course at Escanaba, Michigan, during the week of June 8th.

Refuge Law Enforcement Officer Jones attended the regional firearms instructors meeting and Tactical Firearms Training in Ohio the week of June 15th.

Refuge Operations Specialist Van Riper attended an Assertive Communications Course in Chicago on June 23-24th.

Museum Specialist Harold attended conservation training at the Campbell Center in Illinois during the week of July 20th.

Museum Curator O'Barr received OPM training in Supervision and Group Performance in Kansas City during the week of July 28th.

Refuge Law Enforcement Officer Jones attended transition training for firearm instructors at Glynco, Georgia, during the week of July 28th.

Supervisory Refuge Operations Specialist Root travelled to Albuquerque to give a presentation on IPM and low-input farming to 100 Service participants in August.

Museum Curator O'Barr travelled to Des Moines, Iowa, to participate as a judge in grant reviews with the Iowa Historical Society on August 11th.

Refuge Law Enforcement Officer Reilly returned to FLETC in Glynco, Georgia, to attend the Service's two-week add-on instruction in August.

Supervisory Refuge Operations Specialist Root travelled to Pee Dee NWR in North Carolina during the first week in September to participate in an ATTRA meeting. His presence at this meeting was to introduce practical low-input and IPM farming practices.

Manager Gage attended the Iowa Wildlife Chapter meeting in Guthrie Center on September 1st.

Heavy Equipment Operator Cunard and Maintenance Worker Marquardt attended moist-soil training at Mingo NWR during the week of September 21st.

Manager Gage, Supervisory Refuge Operations Specialist Root, Museum Curator O'Barr, Administrative Officer Porter, and Outdoor Recreation Planner Weber received Cultural Resource Training in Minneapolis during September.

Refuge Law Enforcement Officer Jones attended the firearms qualification course for instructors at the McGregor District of the Upper Mississippi Fish and Wildlife Refuge in September.

Manager Gage and Administrative Technician Harbottle participated in a Nebraska law enforcement/management meeting with federal, state, and tribal attendance (four Nebraska tribes) in South Sioux City, Nebraska, on September 22nd.

Available refuge staff attended radiological training on September 24th. The brief refresher course is provided to the refuge by the Civil Defense Coordinator due to the close proximity to the Fort Calhoun Nuclear Power Plant.

The project leader attended yet another WAM-JAM in Minneapolis during September 29th through October 1st.

Refuge Law Enforcement Officer Jones travelled to the Brussels District of Mark Twain NWR to requalify personnel on October 15-17th.

Manager Gage and Administrative Officer Porter travelled to the Regional Office on November 15th for a review of the design for the headquarter's complex with the architectural firm, TKDA, Inc.

Outdoor Recreation Planner Weber, Museum Specialist Harold, Clerk-Typist Myer, and Refuge Law Enforcement Officer Reilly travelled to the Regional Office to attend the Service Orientation on November 2-4th. Management Assistant Carol Kohan (NPS) also attended the orientation as part of her training assignment.

Maintenance Helper Hinkel attended a pesticide certification renewal course on November 9th.

All required staff attended prescribed burning training in Prairie City, Iowa, during the last week in November, completing the I-220 course and Survival Training. Refuge Law Enforcement Officer Reilly also completed the Basic S-130 and S-190 courses.

Administrative Officer Porter and Administrative Technician Harbottle attended the VISA training in Minneapolis on December 8th.

Outdoor Recreation Planner Weber attended another Watchable Wildlife meeting at Minnesota Valley NWR on December 15-16th.

#### Awards

Wildlife Biologist Root, Refuge Operations Specialist Sheets, and Law Enforcement Officer Jones each received "On The Spot" awards in January for their contributions in solving and quickly processing last Thanksgiving weekend's poaching case.

Administrative Technician Harbottle received an "On The Spot" award in February for keeping up with the Administrative Officer's duties during his four-week detail in the Regional Office.

Administrative Officer Porter received a monetary Special Act Award for his quality assistance while detailed to the Regional Office.

Project Leader Gage and Supervisory Refuge Operations Specialist Root received Special Act Awards for their contributions to the Integrated Pest Management program.

Project Leader Gage, Maintenance Helper Hinkel, and Clerk-Typist Weldon received Performance Awards for their quality work throughout the year.

## 2. Youth Programs

The 1992 Youth Conservation Corps (YCC) summer program began June 15th and ran through August 7th. The four youths, a male and a female each from both Iowa and Nebraska, made up a diverse group. The teenagers were all close in age, but differed dramatically in personalities.

Safety was a major concern of the program. Every Monday morning started out with a safety film. Hazards of each new project were discussed before the work began. During the course of working on a project, if an unsafe incident occurred, the work was stopped and the enrollees discussed the situation. All this did pay off. Not one accident occurred.

The enrollees spent the majority of the summer working on two major projects, visitor center maintenance and litter pick-up. The two-man maintenance staff in the Visitor Center had dropped to only one, due to an extended illness. The enrollees helped to ease the heavy workload on the remaining maintenance worker. They helped with everything from cleaning to painting parking lot islands and striping. Litter pick-up was an on-going project. Every Monday and Friday morning, the enrollees were on litter patrol. This may not be a very exciting activity, but it is a very needed project on a public use refuge.

Another project was maintenance on the four nature trails. A favorite project of the enrollees was musk thistle control. The YCC's hand-cut several areas where mechanical mowing was impossible. The prickly spines and irritated bees kept everyone on their toes. Numerous other projects were completed, including refuge quarter's maintenance, boundary-line posting and fence maintenance, headquarter's maintenance, and decorative fence painting. Due to the heavy workload of the refuge maintenance



crew, many of these projects would not have been done, if not for the YCC program.

The YCC group also were involved in several environmental education programs, included orientations to the refuge, our cultural resources, a hunter safety course, and they even got involved in Canada goose banding. 29-130-92-BW



During the last day of work, the crew was taken to Henry Doorly Zoo in Omaha. This zoo is an excellent facility, with a new "tropical rain-forest", which provides great environmental education opportunities.

### 3. Other Manpower Programs

Harrison County placed an Iowa youth at the refuge through the Summer Youth Employment and Training Program. This program is designed for economically disadvantaged youths, ages 14-21, to provide career exploration and practical work experiences. The young man, Jeremiah Jones, worked on a range of projects, mainly at the visitor center. This program is provided at no cost to the refuge.

### 4. Volunteer Program



A half dozen DeSoto volunteers, the mainstay of our environmental education program, remained active throughout the year as interpretive guides on the trails and in the visitor center. Here, three volunteers collect grass for a prairie appreciation program. 44-017-92-BW

They were augmented by a couple dozen others involved in specialized tasks, such as spring and winter bird counts, artist demonstrations, observation tower and entry station assistance, and research. Deborah Peek of Des Moines contributed 52 hours on summer weekends, researching museum textiles and investigating how we might offer more technical assistance to other institutions. Cindy Manley of Missouri Valley contributed 40 hours of required community service, repainting DeSoto's gates and fences.

Of special note are the services of white-tailed deer researcher Kurt VanCauteren and his assistant, Jill Mumford, who contributed 2,334 hours total this year as they investigated the wanderings of refuge deer. Up to three dozen Audubon Society volunteers joined our regular volunteers to contribute 419 hours during the spring and winter bird counts, and fall waterfowl counts.

#### 1992 Volunteer Services

<u>Activities</u>	<u>Hours</u>
Population Census	2,753
Other/Slide Prog. Prep./Flower	
Study/EE Setup/Training	431
Environmental Education	276
Info/Visitor Center	63
General Maintenance	62
Cultural Resources	52
Computer Work	44
Conducting Tours	43
Trail Work	31
Clerical Work and Program Coordination	6
Total Hours	3,761

A volunteer recognition program was held at the DeSoto Visitor Center on Wednesday, December 9th, featuring Supervisory Refuge Operations Specialist Root and Outdoor Recreation Planner Weber. Terry gave a retrospective on refuge resource management policies and Bruce discussed the overall volunteer program and its highlights. Certificates, mugs, and calendars were presented to each at a luncheon.

The "Volunteer of the Year" Award was presented to Robert Starr, a 77-year-old former banker, who has served DeSoto with distinction as a Volunteer Naturalist and Bird Count Organizer. Bob contributed 2,519 hours at DeSoto during the past decade, including 279 hours in 1992. Several major newspaper articles were written about Bob and his image was featured on the 8' x 10' illuminated volunteer exhibit developed by WASO during 1992, and on display at DeSoto in December. Bob's image also is on the new FWS Volunteer brochure. He is the perfect role model for the Service's volunteer program.

## 5. Funding

The following table details total funding targets for the past five years:

Subactivity	1993	1992	1991	1990	1989
O&M	857,624	820,386	782,700	669,187	739,200
YCC	5,800	6,300	0	6,800	6,800
Flex Funds	0	0	0	2,000	44,000
Quarters	0	0	0	0	8,619
Other	39,600 <sup>1</sup>	36,780 <sup>2</sup>	33,988 <sup>3</sup>	30,700 <sup>4</sup>	25,000 <sup>5</sup>
Fee Receipts	0	0	0	0	24,114
Maint. Mgt.	248,400 <sup>6</sup>	105,000	40,000	75,000	25,000
Total	\$1,151,424	\$968,466	\$856,688	\$783,687	\$872,733

<sup>1</sup>This figure includes \$3,100 Volunteer programs, \$10,000 Private Lands monies, \$5,500 Challenge Grant, \$7,500 Fire Management, and \$5,500 Watchable Wildlife funds.

<sup>2</sup>This figure includes, \$10,000 Private Lands funds, \$17,500 Fire Management, \$5,200 Volunteer money, \$1,580 FmHA Easement, and 2,500 Law Enforcement.

<sup>3</sup>Funding for Coop Education student - \$6,000; Farm Bill - \$5,000; Fire Management - \$12,500; Volunteers - \$1,700; FmHA - \$1,988; and Law Enforcement - \$6,700.

<sup>4</sup>Funding for 1120 repurchase of BLM semi-truck - \$5,000; 1241 purchase of fire truck - \$15,400; 1230 wetland restoration - \$8,000; and 1261 FmHA easement work - \$2,300.

<sup>5</sup>Funds programmed from Fisheries Resources for development of fish habitat, fishing access, and other refuge fishery requirements.

<sup>6</sup>Includes \$130,000 for VC roof replacement and \$58,000 for relocation of headquarter's utilities.

Two major funding shortfalls exist at this refuge. The first, and probably most important, is in base operations. Increased costs of benefits for employees is slowly eroding base dollars. Currently, over twenty percent of the station's bi-weekly payroll is a result of benefits alone. As staff who elected to stay under the CSRS retire or transfer, they will be replaced by employees who are covered by FERS. The increase in benefits paid to FERS-covered employees, as compared to CSRS employees, will continue to increase benefits as a percentage of station payroll. We project that, in the next five years, the percentage of benefits as a percent of salaries at DeSoto will increase to over thirty



percent. We can see where benefit costs are headed and the Service needs to take appropriate action to avert the impact that this increase will have on other facets of base funding.

The second area of shortfall is in funding available for treatment and conservation of artifacts recovered from the Bertrand. This unique collection has very real annual maintenance requirements, but, in FY-93, no specific funding was received. Additional Congressional support and funding, over and above normal station base allocations, is necessary to protect and care for this nationally significant collection. See Section K.2., also.

The refuge presented checks totalling \$49,973 to local counties under the Refuge Revenue Sharing Act. Harrison and Pottawattamie counties in Iowa received \$16,565 and \$3,909.00, respectively. Washington County in Nebraska received \$29,469 in lieu of taxes. This amounts to 89.5 percent of their entitlement under this program.

#### 6. Safety

Safety topics are assigned to individual staff members who are responsible for providing programs for monthly safety meetings. Topics this year included winter safety, physical fitness, and vehicle safety. Three-person teams also conduct quarterly safety inspections of refuge facilities. Cooperation with the state of Nebraska continued in emergency preparedness, due to the close proximity of the Fort Calhoun Nuclear Power Plant.

The station's Safety Plan was updated and circulated during the year. The museum specialist also wrote related museum documents as mentioned in Section H.6.e.

Deer/vehicle collisions are usually fairly common here, but none of the staff hit any this year.

Only two deer collisions were reported; one by Robert Watt from Council Bluffs, who sustained an estimated \$500 damage to his pickup. The deer was later found by a deer researcher. Personal, KVC



The following personal injury accidents were reported this year. On May 5th, a refuge laborer suffered a finger contusion while working on a tractor mower's PTO, the staff's only reportable accident. On July 7th, a lady tripped on some rocks along the lakeshore and sustained a head cut, requiring emergency room treatment; and, on October 20th, a school child rebroke his arm after falling off a parking lot post.

Some accidents are unreported, heard about weeks or months later. Supposedly, a blind child, with a handicapped group from Glenwood, Iowa, fell and broke an ankle at our visitor center during the summer. The group was unscheduled and the incident was unconfirmed.

On October 11th, Officers Van Riper, Reilly, and Museum Curator O'Barr assisted at the neighboring Wilson Island State Park with a medical emergency. A bowhunter had fallen from his tree stand and had injured his back. Officers assisted the ambulance crew, and maintained traffic control. The injured hunter was finally flown out of the park by Sky-Med helicopter.

#### 7. Technical Assistance

The staff responded to 93 technical assistance requests. About half were for information about the Bertrand Collection. Many others dealt with the Wetland Reserve Program, which kept Refuge Operations Specialist Van Riper actively traveling throughout the western counties of Iowa.

A significant endeavor was spreading the word on integrated pest management through tours and workshops. Interest ranged from local farmers to Assistant Director Smith. Supervisory Refuge Operations Specialist Root was invited to speak to Service managers in North Carolina and Albuquerque as well. A biological farming workshop also was given cooperative farmers and local producers in mid-March.

Bear with us and you will understand the extent of our museum endeavors. Technical assistance relating to the Bertrand Collection was provided to 45 individuals in five broad categories: students, re-enactors or reproductionists, museum professionals, history or material culture scholars, and non-professional hobbyists/collectors. Museum professionals were the largest body of users, including the Steamboat Arabia Museum in Kansas City, Missouri; the Robert Campbell House Museum and State Historical Society of Missouri in St. Louis; the Tucson (Arizona) Art Museum; the Museum of the Rockies in Bozeman, Montana; the Metropolitan Museum of Art in New York; the Strong Museum in Rochester, New York; the Early American Museum in Mahomet, Illinois; and the U. S. Army Museum at Fort Bliss, Texas. Architectural drawings of the Bertrand were provided to the National Park Service Historical Architecture and Engineering

Record program (HAER) in Washington, D. C. They had no record of the boat in their files. A Smithsonian Institute scholar was interested in museum instruments in the collection. A member of St. Johns Archeology, Inc., Keith Holland, visited the refuge to review the Bertrand Collection, since he is working on the excavation of the sunken steamboat Mapleleaf, used to carry Union troops during the Civil War. The boat sunk on the St. Johns River near Jacksonville, Florida, with the personal belongings of over 1,000 troops, mostly of New York origin.

Students and teachers were the second largest group. Colleges included Iowa State University, the University of Iowa, Virginia Tech, and the University of New Mexico. One Iowa State graduate student presented a paper about the Bertrand's rubber rain slickers to the National American Costume Society annual conference. Another began her thesis, which will concentrate on the DeSoto Visitor Center and the Bertrand Collection museum environment.

Scholars varied greatly. A food historian will publish a book through the University of Kansas about overland migration diets during the nineteenth century, including information about materials on the Bertrand. A writer in Charlottesville, Virginia, will include the steamboat in an upcoming publication about transportation on inland waterways of the United States. A National Park Service historian plans to utilize information obtained from us in an upcoming book on nineteenth century men's clothing. The collection also was included in two recent reference works, the American Museum Association's annual Official Museum Directory and the Naval Institute's Guide to Maritime Museums of North America.

Living History enthusiasts and reproduction craftspeople consult with the collection staff regularly. A clothing pattern drafter from Past Patterns, Inc., in Grand Rapids, Michigan, plans to sell a pattern based on pants and shirts in the collection. Past Patterns specializes in historic clothing and is regarded highly in this field for their accurate adoption of historic clothing patterns. A weaver studied "point" blankets for reproduction. Several general requests were answered about clothing, the most popular items for this category. The staff also answered questions from a variety of hobbyists and collectors.

One of the most gratifying requests answered was from the great granddaughter of Horace E. Bixby, the Bertrand's pilot. She was very excited to learn more about the collection and genealogical information about her relative, which we had on file. What could we say? He sunk the boat!

8. Other Items/Donations

The Inspector General's Office reviewed the operation of the Maintenance Management System at the field level on October 7-8. Lens Lussier, the representative, reviewed several of the projects that had been completed on the refuge using maintenance management funds.

F. HABITAT MANAGEMENT

1. General

Excellent precipitation for the major portion of the year created very good conditions for most wetlands. Soil moisture conditions improved as the year progressed, and refuge soils are now fully recharged from the drought experienced in the late 1980's. While this year's cool, wet weather was excellent for wetlands, waterfowl, and crop production, it caused prolonged high moisture contents in row crops. This delayed the harvest of soybeans by a full month or more, and the harvest of some refuge corn until after the first of the year. One advantage of this delay was the noticeable decrease in fall tillage on river valley fields. This reduction provided a definite increase in available food for migrating waterfowl over what we have seen in recent years.

2. Wetlands

- a. DeSoto Lake - The management of DeSoto Lake is largely dependent upon Gavin's Point Dam releases and the corresponding Missouri River flows. During spring and summer, little opportunity usually exists to lower DeSoto Lake due to the high river levels required for navigation purposes; this being a gravity-fed lake. In contrast, good opportunities exist for water level management during the river's winter drawdown and periods of low release within the Missouri River Basin.

The management strategy for Desoto Lake is a compromise between waterfowl management, fishery management, and public recreation objectives. In general, an optimum summer elevation of 989.5 msl is desired to make the best use of boat ramps and docks that have been constructed around the lake for fishing access. To accommodate normal spring runoff, and limit summer elevations to 989.5 msl, late winter and early spring drawdowns are usually necessary. Ideally, water levels are reduced through mid-summer evaporation to 987.0 msl by mid-September. This level helps concentrate predator and prey fish species, and it promotes the growth of aquatic vegetation along the shallows. The exposed shoreline during the fall also provides loafing and gritting areas for waterfowl. For the winter months, near-

full pool levels of 989.0 to 989.5 msl are desired to reduce the possibility of a sport fish winterkill.

Ice fishing was not possible in early 1992, because the mild winter weather kept the lake open after the first of the year. But, on the positive side, the station didn't have the expense of running the aerators. Normally, the lake is drawn down in late February and early March to accommodate spring runoff. However, this year, drawdown began in late January and early February due to high water levels. The lake remained over one foot above planned levels throughout late spring and summer. The cool, wet fall increased lake levels two feet above planned levels, requiring drawdown in November when the navigation flows were lowered. However, by year's end, runoff had once again raised the lake level nearly a foot above the desired operational level.

DeSoto Lake monitoring was conducted throughout the year to determine changes in water clarity, water temperature, and dissolved oxygen at specific depths and locations. The decline in water clarity that had been prevalent over years prior to 1990, began to reverse itself two years ago and the upward trend continued this year. Secchi disk readings in early June averaged around 1 meter. Readings began to drop in late June to lows of 0.3 meters. July's readings averaged 0.6 meters. After an algae bloom occurred in August, disk readings dropped again to 0.2 meters, the lowest reading this year, but soon improved.

Lake temperatures were above average for the early portion of the year, but remained below average for the summer and fall. This, along with above average rainfall, resulted in improved water clarity and reduced the frequency and extent of algae blooms from previous years. American lotus continues to spread in shallow parts of the lake, as does phragmites along the shoreline.

In-addition to the above, pH levels fell from 9.1 in 1991 to an average of 8.8 in 1992.

- b. Managed Marshes and Potholes - DeSoto has eight managed wetland units and one moist-soil unit, with another nearing completion. Runoff is held in these units to the fullest extent possible, in season.

Wood Duck Pond averages 24 inches in depth, and comprises approximately 20 acre-feet. Water is kept on this pond year-round to meet environmental education requirements. Wood Duck required 24.5 hours of spring pumping, and 12 hours in the fall to recharge. Spring use by migrating waterfowl was good and fall use excellent, totalling over 4,000 use-days.



The average depth on Buchardt Pond is 10 to 12 inches. Only 12 hours of spring and fall pumping were required this year to recharge the unit. Waterfowl use averaged 1,500 use days for both spring and fall. As in the previous year, the flooded timber section of this unit was used extensively by wood ducks.

The Visitor Center Ponds are comprised of three interconnected units; Coyote, Scoot's, and Osprey. These three ponds are recharged via Crisafulli pumping from DeSoto Lake into Coyote Pond and gravity feeding thereafter. A total of 90.5 hours of spring pumping and 35 hours of fall pumping were required to recharge in 1992. Water levels can be individually controlled as each pond is separated by stoplog structures. Osprey Pond, the southern-most pond, in addition to being fed from Scoot's, also is recharged via a feeder pipe connected to the visitor center's water cooling system. The system uses over an acre-foot of water per day during the peak of the cooling season. Water levels in these ponds will be kept between 6 and 14 inches throughout the pair bonding and brood production season. Cattail growth in both Scoot's and Osprey Ponds has become an increasing problem. Osprey is almost entirely choked with cattails. Two different attempts to control cattails have failed. Osprey pond was drained in late December, and will be kept dry through this next spring and summer. The unit will then be disced to reduce cattail production. Still, waterfowl use on the three units was excellent. Osprey is especially attractive to wood ducks and Canada geese, while mallards and teal prefer Scoot's, and Coyote attracts both ducks and geese. Canada goose broods were produced on both Scoot's and Osprey.

Willow Pond held water through the winter, and no spring pumping was required. Only, 13 hours were required to recharge the unit in late September. Willow is used by just about every species of waterfowl that pass through the refuge. The muddy shore on one side of the unit also is used by many shorebirds. A goose brood was produced here, also.

No management was conducted on the Missouri River Pond or Young's Pond, and they remained dry.

Botos' Pond held water through the winter, and required no spring pumping. Due to extensive muskrat damage in the levee, water could not be put on the unit in the fall. The unit had excellent moist-soil plant growth and is a favored site for waterfowl. Over 2,800 use days were recorded in the spring alone.

A total of 191.5 hours of Crisafulli pumping was needed this spring. A total of 121 hours of pumping was required to attain desired fall operating levels.  
34-077-92-SVR



- c. Moist-Soil Unit - This unit is now comprised of four sections, connected by PVC tubes with stoplog structures. The moist-soil unit required 64.5 hours of pumping in the spring, and 49 hours in the fall. Water is transported to the units via a transport ditch flooded by Crisafulli pumping from Brown's ditch. Three separate gravity flow tubes fill each section from this ditch. In addition, each unit can be fed from the one above it. Previously, in order to pump the transport ditch, three sections of Crisafulli tubes had to be run uphill and through a culvert. During the summer, this culvert was lowered and lengthened to reduce the amount of hose required to reach the culvert. This will ease the pumping process considerably.

The lower two sections of the moist-soil unit have extensive invasion of cattails. These sections, I and II, were drained in late December. They will be kept dry through the spring and summer, and will be disced to manage cattail growth. In addition, muskrat damage to the levee separating these two sections will be repaired while the units are dry. Sections III and IV will continue to be managed strictly for moist-soil plant production.

Use by waterfowl was excellent, with over 24,000 use-days recorded in the spring. Fall migrants put in over 21,000 use-days. The excellent plant growth attracted numerous duck species, including large flocks of mallards, teal, and wood ducks.

Work began in 1991 on a new 45-acre moist-soil unit, north of the existing unit. Standing water from spring rains and high soil-moisture conditions delayed further construction on this unit in 1992. As soon as soil-moisture conditions permit, levee construction will continue and placement of the stoplog structures will be completed.

### 3. Forests

For many years, the refuge has experienced a die-off of mature cottonwoods, with essentially no regeneration to replace existing stands. This problem was addressed in a 1990 Forest Management Plan. Proposed forest management strategies included protection of existing mature cottonwoods for bald eagle perching and roosting habitat, development of a forest management program to ensure a sustained source of roosting and perching trees for bald eagles, promotion of cottonwood regeneration in old grasslands targeted for this management, and systematic flooding of identified reverted croplands to promote cottonwood regeneration. Some experimental flooding was attempted along the east dike in June, 1990. Water retention varied considerably from site to site, and response was unknown at that time. During the following year, it was discovered that germination response had been excellent. Consequently, flooding was planned for 1992 and additional low-level dikes built around other fields. However, the cool summer of 1992 resulted in little seed production of local cottonwoods, and, subsequently, no flooding was attempted. Flooding is planned for 1993, if funds permit.

### 4. Croplands

- a. Cooperative Farming - In 1989, the refuge converted from a cash-rent system to a one-third/two-thirds crop-share farming system. Using this system, eleven cooperators farmed 2,423.5 acres this to provide food and loafing areas for migrating waterfowl, and food, cover, and edge for other species, as summarized below.

Crop	Biological Rotation	Conventional Rotation
Corn	467.1	242.5
Soybeans	741.7	190.5
Clover/Oats	345.4	
Alfalfa	101.6	
Wheat	41.2	
Milo	88.3	
Other*	205.2	
Total	1990.5	433.0

\*Includes alfalfa/oats, clover and oats, and clover seeded into wheat.



In addition to the above farming activities, the refuge reimbursed a cooperator for planting 57.7 acres of winter wheat on Center Island and along the east levee.



The refuge also reimbursed two cooperators a total of \$880 to have wheat aerially sown on 100.7 acres of standing soybeans in early September.  
33-209-92-TR

The results were exceptional, as the cool, wet weather produced an outstanding crop of wheat for green browse.

In early 1990, we were notified by a farmer (Tietz) that he no longer planned to farm refuge acres. Consequently, this area was planted to clover in 1990 and primarily managed for weed control in 1991 as a temporary measure. The sludge demonstration area also was included in this farmer's acres. It was farmed by another cooperator according to a specified schedule in 1990, and the entire plot (104.1 acres) planted to soybeans in 1991 to prepare for grassland planting in 1992.

A major revision of lands farmed on refuge occurred in 1992. These planned changes resulted in a partial relocation of croplands farmed by five cooperators, and the retirement of 633.8 acres for conversion to grasslands. However, due to budget constraints and the cost of grass seed, 412.9 acres of the acres to be retired were farmed in 1992 as a temporary "hold" measure until they can be converted. Otherwise, weeds prevail. After conversion to grassland, the total acres in the farming program will be approximately 2,010 acres, and we will have reached our long-term goal.

Average yields for all crops grown in 1992 were the highest recorded since yield analysis began in 1979. This most likely was due to the numerous, but not excessive, rains received during the growing season. Yields were not just slightly higher, but considerably higher, with corn and soybean yields beating previous highs by approximately 20 bushels-per-acre and 6 bushels-per-acre, respectively. In fact, biological rotation soybeans not only outyielded

conventional-rotation soybeans by over 3 bushels-per-acre, but exceeded previous highs by nearly 9 bushels-per-acre. The table is a breakdown of corn and soybean yields since the biological rotation farming method began.

Average Yield in Bushels/Acre

Crop	1987	1988	1989	1990	1991	1992	1979-1992 Avg.
Conv. Corn	107.5	88.7	88.6	125.5	80.1	146.5	100.3
Biol. Corn	120.2	72.2	68.0	117.8	102.3	146.7	99.5
Conv. Beans	35.3	26.1	35.5	35.4	34.7	46.1	34.3
Biol. Beans	35.9	24.1	34.1	40.5	39.1	49.5	36.5

- b. Food Plots - In addition to the aforementioned change in field assignments, food plot management was transferred to one existing cooperator. Food plot management had been an ongoing problem because most of the existing cooperators farm large acreages and don't place sufficient emphasis on food plot production. Consequently, this action was taken since this cooperator farms small acreages and had a desire to farm the food plots. If 1992 is any indication, this was a good decision because food plot management and production was excellent.

Fifteen food plots, each generally containing three cover types, and totalling 169.1 acres, were grown and left unharvested for wildlife use. Of these, a total of 59.2 acres were in milo, 41.2 acres were in fall planted wheat, 5.1 acres in clover/oats, and 63.6 acres were in wheat and clover (fall-planted wheat from 1991, with clover interseeded in the spring of 1992). The primary objective of food plot management is to provide food for resident and migratory non-game wildlife in locations where public viewing opportunities exist. Yes, Watchable Wildlife. This objective continues to be accomplished, with 100-percent utilization of available food, year after year, by deer, upland game species, and non-game birds.

In addition, the refuge's 174-acre share of refuge corn was left standing or chopped for use by migrating waterfowl and resident game. Milo was grown and left standing on 29.1 acres as the refuge's share of four corn fields, and 8.1

acres of corn strips were left standing for concealment of hunting blinds in our Iowa controlled waterfowl hunting program. These strips also are fully utilized by wildlife prior to spring.

- c. Excess Grain - Each year, the refuge stores 1,200-plus bushels of corn for potential depredation or disease management problems per existing management plans. Any additional grain stored in refuge bins is used to initially attract waterfowl to the vicinity of the visitor center during the fall migration, and for the center's bird feeders. When spring arrives, any held-over grain is inter-elevator transferred to other stations.

Under the current crop-share system, the refuge's entire share of soybeans and some corn is harvested, and the monies used to reimburse cooperators (per the Iowa Custom Rate Survey) for refuge farming activities, such as food plots. Any excesses are made available for inter-elevator transfers to other refuges. In 1992, the cooperators were reimbursed a total of \$26,437.17. The remaining grain monies resulted in the following inter-elevator transfers to other refuges for their banding, feeding, or farming needs, on a first-come, first-served basis.

<u>Refuge</u>	<u>Dollar Value</u>
Valentine/Ft. Niobrara NWR	\$4,500.00
Tamarac NWR	1,000.00
Agassiz NWR	5,000.00
Lostwood NWR	4,000.00
Great Swamp NWR	600.00
Great Swamp NWR	915.00
Shiawassee NWR	4,000.00
Swan Lake NWR	15,017.98
J. Clark Salyer NWR	5,000.00
Medicine Lake NWR	7,000.00
Benton Lake NWR	1,500.00
National Elk Refuge	31,330.34
Blackwater NWR	2,488.80
Mingo NWR	<u>1,260.00</u>
Totals	\$83,612.12

- d. Integrated Pest Management - During 1988, the refuge entered into an integrated pest management project with the Iowa State University Cooperative Extension Service. This three-year project was funded through a grant by the Leopold Center for Sustainable Agriculture. The Center was founded by the Iowa Legislature as part of the Groundwater Protection Act. Its program goals were stated in a previous narrative report, as was a description of the project and its specific refuge objectives.



The total funding by the Leopold Center for the three-year DeSoto Demonstration and Education Project was \$63,016. In addition, DeSoto obligated a grant of \$3,000 to the Leopold Center to allow an additional year (1991) of crop scouting to continue, while awaiting chemical analyses data and compilation of the final report. The project was essentially completed in November, 1991. Conclusions of the final report were submitted in last year's narrative. DeSoto received heavy demand for copies of the final report. The report was assembled on a MacIntosh computer, given a cover, and 200 copies were reproduced locally. The refuge was soon out of copies. (Another reprinting is forthcoming).

Following completion of the project, it was decided by FWS and Iowa Extension Service personnel that additional analyses were desirable, and that water quality monitoring should continue. Funding was provided by the Regional Ecological Services Office. Consequently, FWS, SCS, Iowa DNR, and Iowa Extension Service personnel cooperatively installed four more lysimeters on refuge in mid-May. 33-120-92-TR



One was a relocation of an existing lysimeter to a different crop field, two were installed in a grassland and one in woodlands. These locations were selected to determine the extent of nitrogen leaching below the root zone in natural habitats. Results from these locations were to be compared to leaching below crops grown on the two existing rotations.

Water quality monitoring was limited to lysimeter sampling and surface water, including DeSoto Lake and two drainage ditches. Groundwater was not sampled, because it was felt there would be no additional significant information provided over the data recorded during the last three years.

The following results were obtained from 39 samples, costing \$3,050: (1) soil profile nitrates averaged 38.2 ppm for conventional crop rotations, versus 31.0 ppm for biological

crop rotations; (2) soil profile nitrates were below detection limits (1 ppm) for the grasslands and woodlands; (3) Atrazine, Bladex, Dual, Treflan, and Lasso were all detected in drainageways entering DeSoto Lake following rainfall events. Concentrations ranged from 0.1 ppb for Treflan to 49 ppb for Dual; (4) Atrazine, Bladex, and Dual were detected in DeSoto Lake at levels ranging from .16 to 2.2 ppb. Atrazine and Bladex were detected in all samples, and Dual was detected in all samples, excluding one taken in September.

The question once again arises as to what does all this mean? Simply put, this year's data confirms the three previous year's data. (1) less nitrate is present in the soil profile under biological-crop rotations than under the conventional-crop rotation. Therefore, the potential for nitrate contamination of groundwater is less under the biological, versus conventional-crop rotations. However, the data specifically points out that biological-crop rotations still produce nitrate leaching below the root zone, versus natural habitats, such as grasslands and woodlands; (2) numerous herbicides enter DeSoto Lake after rainfall events. The most common of these are Atrazine, Bladex, Dual, and Lasso. The impact of these herbicides on aquatic plant life is unknown; and (3) Atrazine and Bladex are the most frequently detected herbicides in DeSoto Lake. Atrazine was detected year-round, and Bladex was present most of the year. Again, the impact on the lake ecosystem from these chemicals is unknown.

*"I'm worried that with all the pollution that H<sub>2</sub>O is no longer the chemical formula for water. Lily Tomlin, Montreal, 1992."*

Another IPM project objective was to establish an alfalfa weevil parasite insectary on refuge. This process began in 1988, with two releases of the alfalfa weevil parasite, Bathyplectes anurus, which is the larval parasitoid. In 1989, the adult parasitoid, Microctonus aethiopoides was released on two sites. Survival and propagation of these parasites coincides well with the existing refuge haying program, which incorporates delayed cutting until July 15th.

A 1990 detection survey recovered five species of alfalfa weevil parasitoids, two of which were definitely released on refuge. The origin of the other species is unknown. All, except one, were new Harrison County records. The adult parasitoid, Microctonus aethiopoides, had the highest parasitism rate at 54 percent.





No detection surveys were conducted this year, but 850 alfalfa weevil parasites, Bathyplectes anurus, were released on a Center Island alfalfa field in late April.  
33-212-92-MS

Sweet clover was once again evaluated to determine its viability as a source of nitrogen for corn. This was determined by collecting soil samples in corn at the 3-5 inch growth stage. Results indicated that sweet clover is a viable source of nitrogen.

Available nitrogen in sweet clover varied from 14.4 to 26.3 ppm between fields, with an average of 20.6 ppm, indicating that proper stand establishment is directly related to available nitrogen.  
33-211-92-TR



Corn leaf tissue samples were collected in late fall and analyzed for nitrogen as a measure of the viability of the aforementioned soil sampling method for nitrates. This is an alternative method of determining whether a corn plant had sufficient nitrogen for growth and seed production. The results of these tests were varied, and couldn't be correlated to the soil testing method, or even to application rates of fertilizer on conventional rotation fields. The reason is unknown.

While an objective of the original project involved outreach, most of the interest in the project came from outside the FWS. However, this year, the project prompted a visit by Deputy Director Dick Smith and subsequent invites



to have Supervisory Refuge Operations Specialist Root speak at a Region 2 project leaders meeting and an ATTRA workshop at Pee Dee NWR. In addition, considerable technical assistance was provided to several refuges, regional office personnel, and other agencies.

Some of our work in biofarming and integrated pest management was documented in Ann Y. Robinson's paper, "Sustainable Agriculture: The Wildlife Connection," which was presented in the American Journal of Alternative Agriculture, Volume 6, Number 4. Manager Gage also presented a paper, "Biological Farming, an Effective Program for Wildlife Agriculture", at the North American in Charlotte, North Carolina, on April 1st, and Primary Researcher Marco Buske presented a paper, entitled "DeSoto NWR Demonstration and Education Project", at the 104th session of the Iowa Academy of Science in April.

#### 5. Grasslands



The station's Grassland Management Plan calls for the establishment of 1,000 acres of cool-season grasses and 500 acres of native warm-season grasses. A total of 628.2 acres of cool-season grasses have been planted so far, including 176.7 acres in 1992.  
31-96-92-TR

In addition, 46.7 acres of existing cool-season grasslands were interseeded and 130 acres of warm-season natives also were planted this year. This included a 104-acre field, which was formerly the Sludge Demonstration Site. Its location along the auto tour route and the existence of interpretive pull-outs makes this an ideal field for a large prairie demonstration grassland.

Species planted in the cool-season grasslands include tall and intermediate wheat grasses, Lincoln brome, yellow-blossom sweet clover, and Vernal alfalfa. Species planted in the warm-season grasslands include Indiangrass, sideoats grama, switchgrass, big bluestem, little bluestem, and blue grama.

Germination success by all species was excellent, even though the warm-seasons were planted under dry conditions. Fortunately, the

rains came shortly after planting and the remainder of the cool, wet year provided optimal conditions for success.

6. Other Habitat

Approximately 1,800 lineal feet of the former North Beach shoreline were disked twice for vegetation control to promote potential nesting by endangered least terns and/or piping plovers. In addition, the three-acre peninsula north of the Sandbar area was disked to meet the same objective. The former area is a favorite loafing site for both Canada and snow geese, while the latter is extensively used by Canada geese and mallards. The 35-acre sandbar also is managed for these endangered species, but did not require disking this year.

At the same time, the old prairie demonstration plots at Prairie Lane were plowed under, and the 29 acres were temporarily rotated back into the farming program to control weeds. The 25 plots of eight different native grasses (3 to 4 varieties each) had deteriorated over the years, since their 1972 establishment, with willows and weed species slowly taking over, despite periodic prescribed burns.

8. Haying

The refuge currently maintains 101.6 acres of alfalfa hay, not including a 17.4-acre field planted to alfalfa/oats this year. Management of alfalfa hay changed in 1987, with the annual first cutting date being delayed from June 20 to July 15 to promote completion of nesting by ground nesters, particularly waterfowl.

Management changed again this year with the aforementioned rotation of fields among existing cooperators. Previously, none of the three cooperators with alfalfa ground had any use for it, because they had no livestock. Consequently, there always was a need to subcontract it, which caused them problems. To address these problems, alfalfa hay was removed from their designated farm ground and a cooperative farming agreement issued to a new cooperator for hay only. The new cooperator, Ken Breithaupt of Herman, Nebraska, was selected because he has the desire and necessary equipment to manage hay, being a livestock producer. The cash rent fee is \$18.00, based on a five-year average and is locked in for the three-year term of the CFA. The refuge assessment to a 5-year average has helped reduce extreme fluctuations in cash-rental rates.

9. Fire Management

The 1991 addition of a new Chevrolet 1 1/2-ton, dual-axle 4X4 pickup, with 300-gallon pumper, made burning much easier and safer. The station's old 1954 Military surplus 6X6 continued to breakdown, with one ailment after another. A 11,500-GVW 4X4 truck



was ordered in the hopes of eventually replacing the unreliable 6X6.

The Annual Prescribed Burning Plan called for the burning of 11 native grass fields and five cool-season fields. The late spring weather cooperated and all native fields, totalling 112.6 acres, were burned in late April.  
32-223-92-BW



However, very wet fall weather did not allow for the burning of the cool-season units. These units have been rescheduled for 1993.

#### 10. Pest Control

Regional herbicide management changed in 1988 with a list of approved herbicides being supplied by the regional environmental contaminants office. This list now includes 25 non-restricted-use herbicides, which can be used on station upon approval by the Project Leader. This list was retained, but was further reduced in 1990 by three herbicides which are not feasible or acceptable for use in this area. Cooperators applied nine herbicides for control of sunflower, cocklebur, buttonweed, foxtail, shattercane, and other weeds in agricultural fields. Roundup was applied on the gravel along the entrance road to control invading vegetation. This chemical also was used to kill vegetation in existing cracks on the paved road prior to striping and sealing, and for controlling invading cool-season grasses in the visitor center's lawn, which is a buffalograss/blue grama mixture. Other weed control included hand-removal and mowing of musk thistle prior to blossoming, and the use of Banvel to control musk thistle in a 53.7-acre grassland managed for green browse.

The spread of phragmites along inflow ditches and the DeSoto Lake shoreline has become a real concern. Rodeo was applied on those stands that could be accessed by boat.

Baygon bait was applied around the visitor center to rid the area of roaches, crickets, millipedes, and spiders. As part of the IPM program within the museum storage area and work areas, Baygon bait was replaced during 1990 with boric acid, but was found to be ineffective.



Live traps, glue traps, and Ropux were used to control mice within the visitor center.

14. Farmers Home Administration Conservation Easements

Because the District only had Caretakers Agreement's from FmHA for easements proposed and accepted, only minor management practices were recommended during the year. Law enforcement activities on FmHA easements were kept to a minimum, until an approved policy is written for recorded easements.



Littering has occurred on some of the more isolated FmHA properties.  
34-62-92-SVR

There are only a couple potential wetland enhancement projects among our easements.

Activities and practices accomplished this year included contracting fence work on the Burson easement in Taylor County in January for \$1,446. Also, in the same month, after FmHA contracted the appropriate survey work, posting was accomplished by our staff on the King easement in Taylor County. Both the Bruck and Barry easements in Harrison County were surveyed in January, as well. Taylor County's FmHA office issued a contract to clean up several dump sites on the Burson easement in February. This easement was posted by the staff in February. The Langstraat easement in Sioux County was resurveyed, since the former survey markers were removed before we could initiate posting. Dewild, Grant, Reckert and Associates from Rock Rapids Surveyors were contracted to survey the 6.3-acre tract for \$595, and posting was completed in February.

A Level I Contaminant Survey was completed on the James easement in Adams County in February. A Level II survey was not recommended. Several conversations between ROS Van Riper and the Bruck easement tenant, Darrell Schuning, transpired during the year. Concerns were expressed regarding fencing of the easement, erosion control, and seeding of the dike area. No action was taken on this during the year. However, Mr. Schuning was informed by SCS that he would have to remove the riser tube extension that

he used to increase the surface area of the 7-acre impoundment. No word has been received on whether he has followed through on this or not. The easement remains unrecorded.

In April, ROS Van Riper met with the Taylor County Conservation Board Chairman and Pheasants Forever representative, Jerry Abma, regarding the Burson Easement. A donation of \$300 for switchgrass seed and milo was provided, as well as the seeding of 20 acres into food plots. The County Conservation Board is seriously investigating the possibility of purchasing this property.

Refuge staff posted the R. Bruck easement on the 28th of April. In May, Taylor County FmHA cleaned up several dumps on the Burson property.

#### 15. Private Lands

The Private Lands program had its busiest year to date. Wetland restoration requests increased significantly, and with the addition of the Wetland Reserve Program (WRP), the increased emphasis on the challenge grant opportunities, and the continued interest in channelization and minimal-effect determinations, our 18-county Private Lands Management District kept our Private Lands Coordinator quite occupied during the year.

A total of 24 potential wetland restoration projects were reviewed within nine different counties. Eight of these projects have either been restored, contracted for, or have approval for completion. A total of 21 acres of wetland/upland habitat in four different counties was restored.

Minimal-effect requests for the year included eleven requests, with three denials, and one minimal effect with mitigation approved. Three wetland determinations were reviewed for the Soil Conservation Service, as well.

The Region's Challenge Grant Program proved to be beneficial to us this year, with two of the three proposals submitted receiving approval. A \$4,000 grant was approved for the Iowa School for the Deaf wetland project in Pottawattamie County, and a \$1,500 grant also was approved for the Little Sioux Park wetland restoration project in Woodbury County.

Throughout the year, ROS Van Riper met with Iowa School for the Deaf personnel regarding their proposed environmental education center and, specifically, the four-acre wetland and upland site. Considerable interest and involvement has been shown by numerous organizations, both governmental and private groups.

A 51-acre wetland enhancement project in Shelby County, which would eventually include a nature trail and interpretation was



inspected by ROS Van Riper in April. Negotiations with the two elderly landowners are currently the latest hang-up.

In October, a two-acre wetland restoration project on Dordt College in Sioux County was completed. In cooperation with Iowa DNR, we contracted Vander Pol Excavating for \$3152.50. The wetland project will be used as an outdoor classroom for their students and the community.

In May, Maintenance Worker Marquardt completed 40 hours of wetland enhancement work at Tieville Bend in Burt County, Nebraska. This Wildlife Habitat Renewal Foundation project should potentially benefit both least terns and migratory waterfowl.  
34-191-92-SVR



A two-acre wetland enhancement project in Washington County, Nebraska, was completed through force-account measures for the Arbor Park Middle School in Blair, Nebraska, in August. 34-072-92-SVR

A two-acre native grass field also was established to enhance the above school's arboretum. Environmental classroom activities are planned for the students.

A five-acre wetland restoration project at Iowa DNR's Snyder Bend was accomplished by force-account activities in Woodbury County during September. A total of 42 hours was spent restoring a silted and cattail choked former oxbow into a usable shallow water



wetland. Maintenance Worker Marquardt also built nesting islands as part of the wetland complex for Canada geese and other water bird use.

In October, another wetland project was completed. This one was contracted with Anderson Construction for \$1,900.

The four-acre Oak Ridge Conservation Area project in Woodbury County was planned, contracted, and completed in cooperation with the Soil Conservation Service, the County Conservation Board, and Pheasants Forever.  
34-075-92-SVR



A contract was awarded to the Ring Construction Company for \$875 for the Duane Errett wetland restoration project in Shelby County in August. This small project could potentially develop into a ten-acre wetland and upland project. But, it will require some engineering, since springs gush to the surface in an unmeasurable array.



In May, the Wetland Reserve Program (WRP) became a reality. The potential for restoration of thousands of acres of wetlands in Iowa and the eight other pilot states will be limited only by available funding.  
34-070-92-SVR

Within this station's Fish and Wildlife Management District, a total of 68 WRP intents were signed by interested landowners in June, with over 5,000 acres of potential wetland/upland habitat to be considered for permanent easements. During the month of July, ROS Van Riper inspected over 50 WRP intents in 12 counties. In August, Van Riper assisted SCS District Conservationists with

writing, reviewing, and approving 47 WRP Plan of Operations in 12 counties, encompassing over 4,000 acres. In September, a total of 37 WRP bids were actually submitted to Washington from the 18 counties within our District. Four of these 37 WRP bids were submitted for the 5 percent Priority Statue, which SCS and Van Riper coordinated for this District. The Wetland Reserve Program's final selection of bids was revealed in January, 1993. Our District received 10 bid selections out of 37 bids, for a 27 percent return on our effort. Not bad!

Throughout the year, with the assistance of SCS, the word got out that the Service was providing technical and, at times, financial assistance to private landowners toward wetland/upland habitat restorations/enhancements. Thus, a considerable number of requests were received and many of these, if the potential appeared warranted, were inspected. Several environmental education/outdoor classroom talks on wetlands also were provided to different school groups throughout the year, emphasizing the Partners For Wildlife Program.

ROS Van Riper met with Iowa Area Forester Brent Olson in December to discuss potential restoration/enhancement projects for the Loess Hills State Forest. Several potential sites were reviewed, and possible funding opportunities explored.

Refuge Manager Gage and ROS Van Riper had several meetings concerning the Honey Creek Lake acquisition project over the year. The latest was held at the Pottawattamie County Conservation Board's Camp Hitchcock in December. Funding opportunities, management concerns, and operational needs were addressed. While it was thought that some of the landowners would bid portions of the farmed wetlands under the WRP, nothing happened. Approximately 200 acres were under water most of the growing season, and thousands of waterfowl, marsh, and water birds used the area. The site is definitely one of the best remnant oxbows left in the valley and we probably will pursue a 600 to 800 acre purchase under the Missouri Chutes PPP as planning progresses. Everyone has talked about saving this wetland for years, but nobody has done anything.

## G. Wildlife

### 1. Wildlife Diversity

DeSoto stands as a reminder of the diversity of both plant and animal life that used to dominate the Missouri River bottomlands. Biodiversity is maintained through many management practices, including development and expansion of waterfowl breeding pair and brood habitat; placement of wood duck boxes and improvement of



nesting habitats; shrub and tree plantings; native grass seedings; intensive grassland, cropland, and water management; moist-soil unit development; and other routine habitat manipulations which maximize edge and habitat diversity.

## 2. Endangered and/or Threatened Species

January temperatures were mild, which kept DeSoto Lake open and allowed waterfowl to stay well into the month. Bald eagles took advantage of the remaining birds, and also utilized the river to find prey species. Twenty to thirty eagles returned (or may have never left the local area), and began feeding on the early migrating ducks.

A mature female bald eagle was released on the refuge on March 9th. The eagle had been found in Nebraska, suffering with avian cholera. The Raptor Recovery Center in Lincoln treated the bird and released her. 29-129-92-BW



All eagles had migrated on north by April 4th. Bald eagles returned again by mid-October. Peak numbers were reached in late November, with 45 birds present.

Again, this year, efforts were made to attract interior least terns and piping plovers. Roughly 1,800 linear feet of the former North Beach shoreline, 35 acres of the Sandbar area, and two acres of Sandbar point are maintained by discing as potential nesting sites. Tern decoys also are placed on these areas to try to lure in the birds. Two immature least terns were observed on the sandbar in early August as they began migrating south.

## 3. Waterfowl

### Winter Period (January - February)

The lingering fall migrants were not driven out by harsh weather in January. At mid-month, over 25,000 snows and 2,000 mallards remained, but not where the public could appreciate them. A cold front on the 16th froze over the lake briefly. The snows headed south, but the mallards and 550 Canada geese stuck it out, and kept an opening in the ice at the south end of the lake. It



wasn't long before the snow geese were back. As early as February 14th, less than a month after they had left, large flocks of snow geese were passing through. The Canada geese also felt the tug of spring and began establishing territories as early as February 19th.

On February 12th, a mute swan was observed on the refuge for several days. This is an unusual sighting here.

#### Spring Period (March - May)

Waterfowl numbers built up throughout March and into the first week of April. The Canada geese began seriously nesting, in the nesting structures and on muskrat mounds. Six structures were utilized and several geese used muskrat mounds for nesting. The first brood hatched on the 15th of April. Five days later, over 10 inches of snow fell. The snow was very wet and heavy, and should have quickly killed young goslings. Luckily, the cunning adults moved the young under a very low boat dock, out of the wind and snow. At least eight additional broods were spotted. A mallard and a blue-winged teal brood also were seen on Willow pond the last day of May. Few duck broods are normally seen here, except for woodies.

DeSoto has had an active wood duck box nesting program since 1967, when seven boxes were erected. Nest boxes had traditionally been placed over ponds around the refuge.



Due to extensive dump nesting (as high as 66 percent), the double nest boxes were moved into the timber in 1989, and one of the holes covered to exclude woodies. Since that time, there has been virtually no dump nesting. 29-131-92-DR

However, there have been other concerns. The first year, we had considerable problem with squirrels and wrens taking over the guarded boxes. However, wood duck nesting was good in available boxes. The 1990 nesting season also was good for the ducks, with a 63-percent hatching success, and the squirrels essentially were driven off by cutting overhanging limbs. The percent of eggs



hatched continued to climb in 1991, up to 79 percent. However, only 15 of the 42 boxes were used by ducks.

An additional 23 wood duck boxes, with predator guards, were erected this season.  
31-093-92 SVR



Again in 1992, the percent hatching success rose, but the number of eggs laid and number of boxes used fell.

Year	No. Boxes	Total Eggs	No. Eggs Hatched	Percent Hatched	Empty Boxes	Dump Nests	Boxes With Owl Sign	Boxes With Squirrels
1989	41	284	121	42	19	5	15	13
1990	42	294	187	63	22	6	17	3
1991	42	114	91	79	27	1	21	8
1992	65	140	126	90	47	0	18	1

Why? Are wrens the problem? Doubtful, they begin nesting long after the wood duck hens would establish their nests. Bees or wasps? Some boxes had signs of these pests, but very few. The only common occurrence during the last four years has been screech owls. These little guys are seen each February by the staff when the boxes are checked. We had assumed they were using the boxes during the winter for their own nesting and then leaving. However, we now believe they are using the boxes year-round to escape the numerous great-horned owls on the refuge. When a hen wood duck begins looking for a nesting site during the day, she discovers a sleeping owl in the box and leaves. There are currently 65 boxes on the refuge, appearing as if there would be enough for both owls and ducks. However, we're coming to realize that one owl will use three to five boxes in his territory, storing dead mice and birds in each one. More seasonal monitoring



is needed to determine if this is truly the problem, and if so, what, if anything, should be done? We like screech owls too.

#### Summer Period (June - August)

The numerous Canada geese did well, with the lake almost totally to themselves. The public greatly enjoyed the sights and sounds of the Canadas. In June, a combined effort between refuge staff and personnel from Iowa Department of Natural Resources resulted in banding 20 of the immature Canada geese. The YCC youths really enjoyed this hands-on experience. We did too!

#### Fall Period (September - December)

Some blue-winged teal showed up in September. The ducks really began arriving in late October and, by the end of the month, about 12,000 mallards were present. Their numbers climbed until they peaked on November 18th, at 70,000 birds. Mallard numbers stayed high throughout November and into the beginning of December. Only 2,000 mallards remained by month's end. A total of 16 species of ducks were observed during the year. Duck numbers on the refuge have fallen from a peak of 750,000 in 1969 to lows of 10,000, to 70,000 during the last four years. In the 1960's, we saw dramatic numbers of ducks and few snow geese. Then, during the 1970's, the two groups were about equal in numbers. By 1982, the species had diverged; the goose numbers rose dramatically, while the ducks dropped to all-time lows. (See Graph). Duck use-days this year were 2,137,612, which is higher than the average of the last five years of 1,653,078 use days.

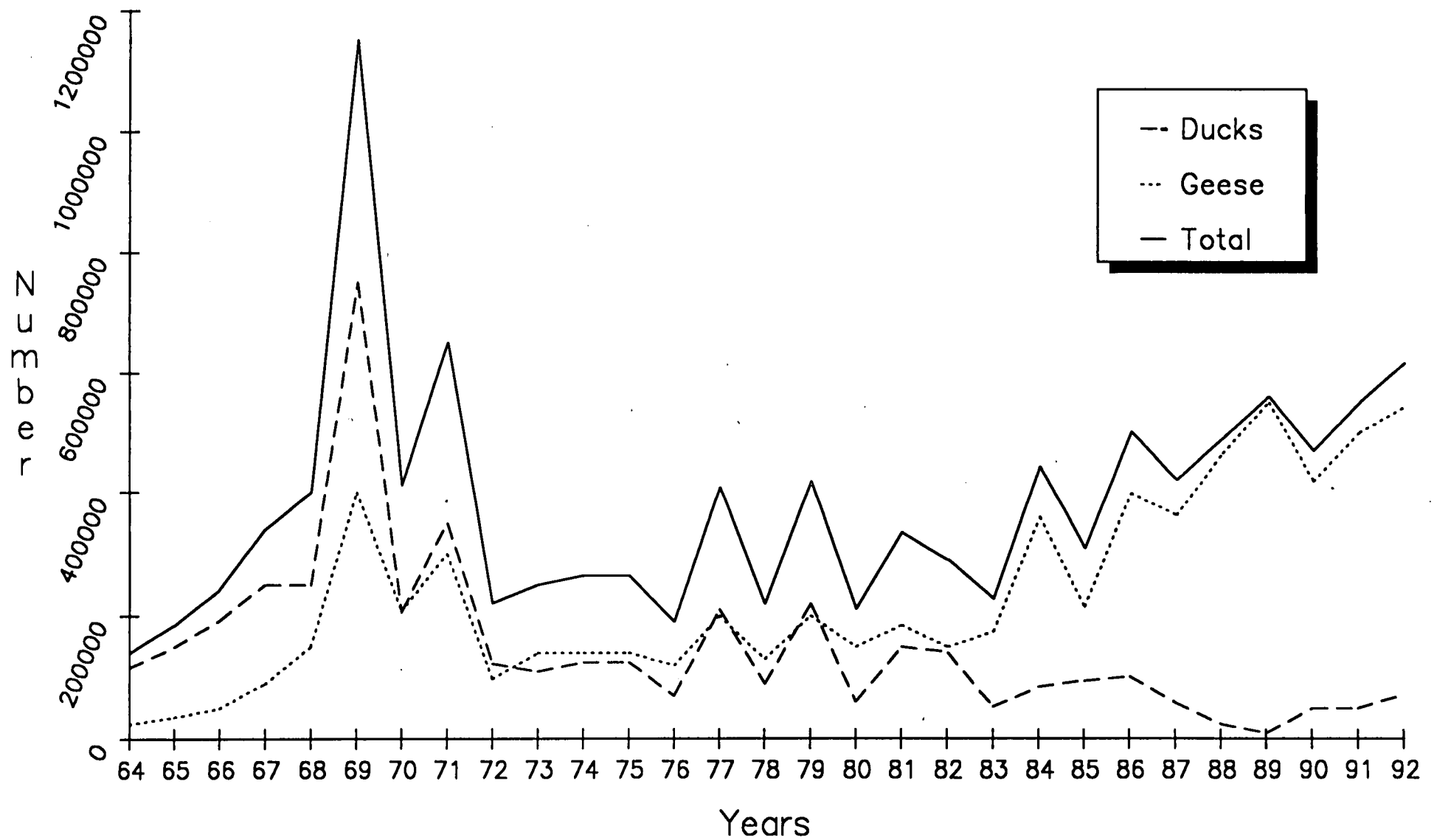
Only a few hundred snow geese had shown up by the end of October. But, by the first week in November, over 250,000 snows had piled in.



The snow geese peaked on the 25th of November with 543,000 birds present, the second highest peak ever recorded on refuge. Personal, DR

Snow goose numbers stayed high throughout December, and there were still 100,000 snows here at month's end.

## Peak Waterfowl Populations





This sight, looking north from the visitor center's viewing gallery, was a common occurrence throughout the fall migration period. Both the center and the North Tower usually had large flocks visible for public enjoyment.  
1-141-92-BW



Canada geese reached a peak of 1,200 birds by the end of December. Total goose use-days reached an all-time high of 18,267,237 days. (See Graph). Total waterfowl use-days were 20,404,849, which is about double the 30-year average of 10,993,570.

Snow goose productivity was way down. Random counts documented a range of one to seven percent immature birds. Very few neck collars were seen.

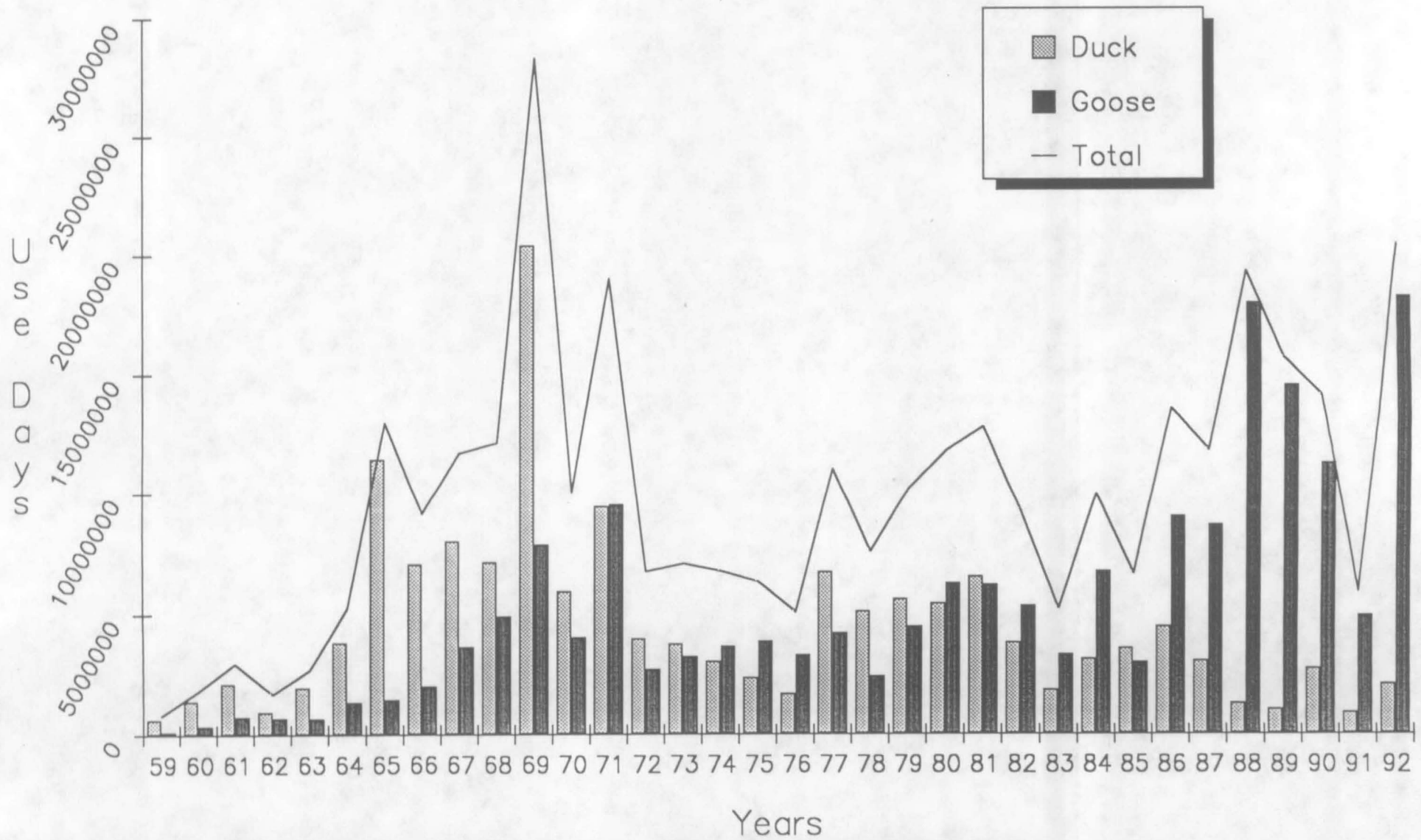
In November, a trumpeter swan used the refuge for several weeks. The large immature bird looked very out of place following the ducks around the lake. This bird was often visible from the viewing galleries at the center.

#### 4. Marsh and Water Birds

Several green-backed herons, black-crowned night herons, great egrets, eared grebes, and pied-billed grebes were observed on DeSoto Lake. The white-faced ibis is an accidental species here, but four showed up for a few days on Botos' Pond this spring.

Pelicans and cormorants made their spring and fall stops on the refuge again this year. After the spring migration was well over, a group of 35 pelicans unexpectedly showed up at the end of June, along with several great-blue herons. The birds stayed on the refuge throughout the summer. A group of 18 cormorants appeared on the refuge in early June, and also stayed. This was a very odd occurrence, since they didn't attempt to nest.

# WATERFOWL USE DAYS







In late April, a brown pelican appeared on the refuge. The bird fished in the lake for several weeks, drawing many excited Auduboners, before vanishing. 11-139-92-SVR

#### 5. Shorebirds, Gulls, Terns and Allied Species

Numerous killdeer were nesting everywhere, including in the parking lots. Ring-billed and Franklin's gulls, along with Forester's and common terns were observed in season. Other sightings included; marbled godwits, greater yellowlegs, lesser yellowlegs, solitary sandpipers, willets, spotted sandpipers, semipalmated sandpipers, dunlins, long-billed dowitchers, common snipe, and pectoral sandpipers.

#### 6. Raptors

Patrolling law enforcement officers spotted numerous barred owls throughout the year. Chances are the owls are increasing on the refuge. Great horned owls are quite numerous, and nest here. Every year, when the wood duck boxes are checked, many boxes are occupied by eastern screech owls, some of which are nesting. No barn or long-eared owls were sighted this year.

Red-tailed hawks are seen in substantial numbers throughout the year. Several pairs nested on the refuge. Several species of hawks have been observed throughout the year, including: northern harriers, rough-legged, Swainson's, Cooper's, and sharp-shinned hawks. Many other raptors were seen: American ospreys, merlins, American kestrels, turkey vultures, and, of course, bald eagles.

#### 7. Other Migratory Birds

The Audubon Spring Bird Count was held on May 9th. Many local Audubon members participated in counting 121 species, well over last year's 92 species. Fourteen different species of sparrows were counted.

The mourning doves continue to thrive throughout the refuge, especially in the headquarter's shelterbelt.



Woodcock, common crows, belted kingfishers, bluebirds, tree swallows, and northern rough-winged swallows were frequently observed during their respective nesting seasons.

The Christmas Bird Count was held on December 20th. Numerous Auduboners, again, participated in this count. A total of 53 species were counted.

8. Game Mammals

The only big game animal that resides on the refuge is the white-tailed deer. Insufficient snow cover prevented an aerial count of the herd. A ground transect count was done prior to the muzzleloader hunt, and 131 deer were counted. These survey numbers have been low over the last few years, but the herd appears healthy and their habitat is in good condition. A study is continuing on the refuge's deer population. See Section D.5.

10. Other Resident Wildlife

The turkey population is stable. The original 14 turkeys released on the refuge in 1986 have flourished and multiplied, even spreading to refuge lands on the west side of the Missouri River. This Tom was taken by graduate student VanCauteren on the adjoining Rand's Bar WMA, a first in the bottomlands around DeSoto. Personal, KVC



The pheasant and bobwhite quail populations were doing well until the ice and snow storms last November and December. The pheasants fared better than the quail. The milo food plots on refuge provided shelter and food for many birds.

Those who doubted reports in 1991 became to believe us when they too came face to face with an elusive river otter. Last year, the YCC and a visitor or two reportedly saw an otter on the refuge, but these reports were met with disbelief, or laughter. In March, and again in May, otter sightings were made on opposite sides of the refuge by qualified personnel. The Iowa Department of Natural



Resources has been releasing otter throughout the state in recent years. Perhaps, one or more of these have wandered through or taken up residence at DeSoto.

Mink and muskrat numbers continue to climb. Muskrat mounds can be seen throughout the expanding cattail beds, and several pairs of nesting Canada geese have used them.



Beaver also have increased. Several large lodges have popped up around the lake, much to the delight of the public.  
15-068-92-MS

Numerous dams were built on the inflow ditches; not to the staff's delight. Drainage culverts required frequent maintenance and the dams had to be constantly torn out to keep the ditches flowing, so as not to flood off-refuge farmlands.

Raccoons are ever present on the refuge. However, they did not cause any problems this year. No incidences of public nuisance or disease were noted.

#### 11. Fisheries Resources

Stocking for the year was as follows:

Date	Species	Number	Size
4/3	Northern Pike	680,000	fry
4/7	Northern Pike	1,500,000	fry
4/14	Walleye	800,000	fry
4/17	Walleye	700,000	fry
4/20	Walleye	(Dead on arrival)	fry
6/11	LM Bass	60,000	1"
8/4	Ch. Catfish	8,000	6-8"
10/1	Walleye	9,360	5-6"

\*Shipped by Air Express, delayed flight.



Approximately 3,757,360 sport fish were stocked this year, bringing the total fish stocked since the 1985 renovation to over 29.6 million.  
18-247-92-MS



The annual DeSoto Fishery Coordination Committee meeting was held as a conference call early in the year. Representatives from the Service, Nebraska Game and Parks Commission, and Iowa Department of Natural Resources continue to cooperate in the management of DeSoto Lake. Management objectives involve fish stocking requirements, roughfish population control, as well as review of size and limits of bass, northern, and walleye. No changes in any regulations are foreseen within the next few seasons.

Four commercial fishing permits were issued for roughfish harvest during the year, with only three of the free permits being used. Permits were first issued for use on March 24th, with the season ending by the 15th of October. Commercial trammel-netting of carp and buffalofish was not allowed during weekends, when sport fishing use generally increases. The roughfish harvest amounted to 43,219 pounds, compared to 51,290 pounds in 1991. Hoop nets were experimented with by two of our commercial fisherman in July. Hopes were to crop the extensive young carp population that continues to proliferate. Little success was gleaned from this year's attempt.

The electrical aeration system was not required in 1992, due to the very mild winter and cool summer. The system was turned on just once to exercise the electric motors and clear the lines of any silt. However, the electric fish barrier on the DeSoto Lake outlet tube had to be activated repeatedly as conditions permitted, to lower excess water levels. The eleven rock fishing jetties suffered extensive erosion damage from wave action during high water. But, high water levels and mild temperatures throughout the majority of the year contributed to ideal habitat conditions for our fishery resource and, as a result, no observed die-offs occurred.

Cooperative electro-shocking with state personnel was accomplished in October to provide age-class structure, species composition, and health of the population. The fall sampling indicated a declining northern pike population, that is in poor condition.



There are a few in the lake; those few are quite large. Walleye are doing well, and are stable. Most are 1-6 pounds.

Channel and flathead catfish are in good condition. Channels are running 1-8 pounds, and flatheads are 10-20 pounds. One tournament fisherman claims he released a 32-pound flathead.....maybe. Largemouth bass are fairly stable, averaging 2 pounds, and 16 inches in length. Adults are in good condition. Survey indications are that the lake still lacks sufficient sport fishery habitat, with young of the year not surviving through the winter into their second year. 18-246-92-JB



Carp are in stable, but poor, condition. They averaged 16 inches, and 1-1/2 pounds according to the mark-and-recapture survey done in October. The buffalofish are running large, and are healthy.

Crappie were seldom seen. Those measured were 7-9 inches in length, and are 1/4 to 3/4 pounds. Bluegill ran up to 8 inches in length, and averaged 6 inches, but are rarely caught, indicating the population is declining.

Finally, the ever-present black bullheads averaged 6-7 inches, with some measuring up to 9 inches. The increasingly voracious flathead catfish population hopefully will be taking its toll on these bullheads. There is little doubt that they are competing for available forage, and probably syphon up larval sportfish and smaller fry as well.

Our ongoing efforts continue to provide additional structure/habitat for improved recruitment. Once again, a local Boy Scout troop from Omaha built a large plastic, multi-bucket fish habitat structure as an Eagle Scout project during the summer.

#### 16. Marking and Banding

A total of 27 Canada geese were caught during the June molt and 20 goslings were banded. The seven adult recaptures were all Iowa



Department of Natural Resources banded geese, relocated here during the period 1986-1988. This was the station's first banding or marking of waterfowl since the snow goose energetics study in 1976-77.

#### 17. Disease Prevention and Control

A dead immature bald eagle was found on December 13th near the Bertrand site. It was sent to the National Wildlife Health Lab. While we suspected secondary avian cholera, because the carcass was in good condition, lead poisoning was confirmed.

Avian cholera had infected the migrating snow goose flocks in the fall of 1991. Some of 25,000 stressed snow geese that remained into January continued to die. A total 255 birds were picked up and incinerated. No significant die-offs occurred during this fall's migration.

### H. PUBLIC USE

#### 1. General

The refuge had 331,897 visitors, just 699 less than last year, but well under the ten-year average of 374,652. The ten-year average for visitors through the visitor center is 170,406 visits. However, this year, the visitor center hosted only 151,108 people, which is still a 19-percent increase over last year's poor showing.

The visitor center was closed by Regional Office decree on Wednesdays and Thursdays for awhile in late winter, but the restriction was reduced in April, so that we were only closed on Wednesdays through the end of the fiscal year.

48-102-92-SVR



No Congressional inquiries resulted. The bark stopped here! Winter, spring, and summer use remained much like previous years. No major changes occurred in exhibits or programs on the refuge, except for revamping the fall auto tour. Environmental education and recreational uses remained fairly constant.

However, the fall snow goose migration was superb, which drew crowds. November is normally the busiest month of the year. Last year's visits to the refuge in November totalled only 32,388, but, this year, some 50,128 visitors came. November is often a nightmare of traffic backed out onto U. S. Highway 30, parking lots overflowing, directing traffic all weekend, etc. This only happened on one November weekend this year, although some traffic control was required on another Sunday later in the month. Visitation was relatively well-paced, and everyone was pleased with the sights and sounds.

COMPARATIVE VISITATION DATA (VISITOR NUMBERS)

	<u>Ten-Year Average</u>	<u>1992</u>
Interpretation (Visitor Center)	435,333 (170,406)	368,366 (151,108)
Environmental Education	7,466	8,671
Consumptive Wildlife Recreation	42,924	48,864
Non-Consumptive Wildlife Recreation	220,943	308,221
Non-Wildlife Recreation	<u>19,248</u>	<u>1,272</u>
Total Public Use	725,914	733,394
Total Refuge Visits	374,910	331,897

The station's major visitation numbers all increased over last year. When the geese didn't stick around in the fall of 1991, word soon got out, and people no longer came. But, this year, with good weather and an almost ideal migration situation, we had lots of people who participated in a full range of activities, which boosted all statistics. Environmental education visitation was near an all-time record. Non-wildlife recreation is not encouraged. Such use was down from the long-term average, which included clientele who once used the refuge for sunbathing, swimming, powerboating, and waterskiing. Increasingly, the refuge is an attraction for the visitors who appreciate its value for wildlife observation and education.

Several consumptive wildlife uses occur on the refuge. There are hunting programs, which consist of a controlled waterfowl hunt, a muzzleloader deer hunt, and two archery deer hunts. A decrease in waterfowl hunters this year was compensated for by a slight increase in warmwater fishing, and other consumptive uses, such as mushroom and berry gathering. The mushroom hunters increased from eight thousand to ten thousand visits this last spring.

Non-consumptive wildlife recreation increased, when compared to the last ten years. These uses, including picnicking, wildlife observation, trails, boating, photography, etc., have steadily



increased since the 1984 closure of DeSoto Lake to active (non-wildlife) recreation. Peaks in the 1970's were nearly 200,000 people, compared to the few who still use the refuge for family reunions, club picnics, regattas, etc...today.

Summer visitation, from Memorial Day weekend through Labor Day, totalled 125,229 people, with 6,705 on the Memorial Day weekend, 5,655 on the Fourth of July weekend, and 6,534 on Labor Day weekend. In the distant past, water recreation attracted up to 10,000 people on any of these holidays. Overall, this season's use was almost the same as last year's, when we had 126,050 visits during the summer period. The public use season was extended from September 30 through October 14th, (like last year), to maximize the potential for fishing, but use was light during the period.

a. Entrance Fee System

This was the fifth year of entrance fee collection and another year of declining revenues. Receipts from single visits were down by about \$6,000. Convenient self-registration stations are located near both entrances to the refuge, and another is located in the visitor center.

Cost effectiveness of this program remains poor. A total of \$54,317 was collected in entrance fees during the fiscal year, but collection cost the refuge an estimated \$26,167.



The refuge gets to keep 30 percent of daily receipts, which was \$16,295; yet it costs almost twice that for fee collection.  
30-136-92-JB

There is no gain for the refuge and it takes staff time away from more important wildlife and people management responsibilities. In addition to the time spent dealing directly with the receipts, the staff spends a great amount of time trying to explain the system to the confused public. Some visitors, who should be paying, are not, and senior citizens, who do not have to pay, are.



The fee booths also cause traffic tie-ups during busy November weekends. On two occasions, they had to be closed for public safety, as long lines formed.

48-082-92-BW



#### Fiscal Year Entrance Fee Data

Year	Refuge Cost	Receipts	Paying Visitors	Total Visits
1988	19,483	60,534	30,267	382,003
1989	23,039	61,750	30,876	386,030
1990	20,145	56,087	28,044	390,929
1991	23,590	48,684	24,342	371,139
1992	26,167	54,317	27,159	313,584

Most receipts were down for the calendar year; Duck Stamp sales remained about the same. Federal Duck Stamp sales totalled \$8,790, nearly half of which was collected by the Nebraska Game and Parks Commission from duck hunters buying licenses at their Omaha Office.

Group/commercial fees accounted for \$1,850, from 76 vans and buses. We charge \$15 for commercial vehicles with less than 21 persons; \$25 for 21 or more people. Golden Eagle sales came to \$1,675. A total of 1,596 free Golden Age, and 80 free Golden Access Passport, were issued during the year.

When added to the regular \$2 entry fees, the total amount collected comes to \$54,317. This is \$6,592 less than last year's receipts, mainly because we took in \$6,000 less in \$2 entry fees; and, sadly, we turned away quite a few potential visitors.

Both the refuge fee and Nebraska Game and Park's fee will increase next season, while Iowa Parks (Wilson Island included) don't require fees.

Entrance Permits

Type of Permit	Number	\$ Receipts
Single Visit	19,836	42,002
Groups/Commercial	76	1,850
Golden Eagle	67	1,675
Golden Age	1,596	-
Golden Access	80	-
Duck Stamp (for entry)	586	8,790
Total	22,241	54,317

b. Public Information

The staff responded to 11,276 public inquiries, about the same number as last year. This includes 9,513 telephone responses, and 1,729 written responses. All of this keeps the phones ringing and the computers humming.

Twenty-six news releases were sent to news media in Iowa and Nebraska, as well as major Kansas, Missouri, and South Dakota media. Our mailing list consists of 225 television, radio, and newspapers; this covers the major small towns in our two-state area. Special information was provided to journalists from the Omaha World-Herald, Blair Enterprise, Des Moines Register, Council Bluffs Nonpareil, and Lincoln Journal-Star newspapers.

Twenty-four interviews were provided to newspaper and magazine representatives during 1992 by DeSoto staff. Topics included goose migration, art shows, fishing, openings of the summer season and auto tour, and the Bertrand. Manager Gage was featured on the Nebraska Game and Parks Radio Talk Show in September. Several taped messages were recorded by radio stations and several visits by TV stations resulted in features on deer research, an eagle release, and the snow goose migration.

c. Public Relations

Last year, Nebraska Game and Parks personnel joined NETV cameramen in acquiring excellent footage of deer, coyotes, and turkeys at DeSoto. Some of NETV's footage has shown up in programming "interludes". Some was used in a Nebraska Game and Parks videotape production, "Bowhunting; A Timeless Tradition", which serves as an excellent hunter education



film, promoting hunter ethics. More recently, a seven-minute segment on the DeSoto deer study appeared in the last half-hour NETV program, "NEBRASKALAND", which ended its series in October.

Then, the visitor center and hordes of snow geese appeared as backdrop throughout a half-hour children's show, entitled "Video Max", which was syndicated nationwide in November by ABC. Later in the month, Primary Assistant Root was interviewed by a local TV station during the peak of the snow goose migration, which was syndicated by CNN affiliates.

Programs, exhibits, and assistance with public relations matters were provided to other Service entities, outside agencies, and public forums. Numerous questionnaire responses and information packets were sent to Iowa and Nebraska tourism offices, plus AAA units.

A total of 238 slides were loaned to individuals, organizations, and publications. The Washington Office used a slide of volunteer Bob Starr for its new volunteer brochure. Motor Home Magazine used our slides in an article about the refuge.

d. Off-Refuge Programs

In February, the staff prepared an exhibit for the Outdoor Sportsman's Exposition at the Civic Auditorium in Omaha. The booth was staffed by station personnel and volunteers.

One of the neatest presentations of the year was a concerted effort to coordinate an interpretation of wetlands and prairie within our wetland/prairie development at the Arbor Park School's Arboretum.



The staff gave six presentations to a total of 525 Arbor Park 4-6th grade students at their wetland enhancement site in May.  
44-025-92-BW



Several members of the staff and many volunteers travelled far and wide to give 23 off-refuge programs to roughly 910 people. The topics of the programs varied almost as widely as the audience. Programs were given to service clubs, history clubs, libraries, and schools.

The staff participated in a career-day program at Ft. Calhoun High School. The refuge's film library did some traveling, also. The staff loaned out 31 films and videos to 366 separate audiences. Films were loaned to schools, the Iowa Department of Natural Resources, scout groups, historical societies, senior citizen centers, other national wildlife refuges, and the National Park Service. The Wilson Island State Recreation Area borrowed films weekly during the summer for their weekend outdoor theater program.

e. Signs and Publications

The Regional Sign Center produced for us a replacement DeSoto entrance sign (2-sided), 200 conservation easement boundary signs, and 12 deer-crossing signs.  
Personal, DR



We ran low on refuge brochures, so only 1,000 were initially distributed to the local Iowa and Nebraska State Tourism Offices and Welcome Centers. Demand for refuge brochures is high. After 50,000 were reprinted by GPO in late summer, we sent off 5,000 copies to 20 separate offices and agencies. An unfortunate mistake in the Regional Office required our staff to individually mark each brochure to indicate the correct color of "open areas". This was a time-consuming task for 50,000 brochures.

The staff updated the application process for the waterfowl hunt. A tri-fold application card was revised, which the prospective hunter fills out and mails in for the drawing. Permission to have a quantity of 1,500 printed locally was given, due to the timeframe.

The self-guiding auto tour brochure received completely new interpretation with the rerouting of the tour, also. A copy of the new brochure is enclosed revised.



## 2. Outdoor Classrooms - Students



Every month of the year, particularly during spring and fall, the refuge pulses with the activity of students. A total of 8,542 students (391 classes) visited the refuge.  
44-023-92-BW

This was about 8 percent above last year's use. Many teachers also borrowed films, slide shows, and videos to use in their classrooms.

January through April brought 892 students to the refuge. But, May was, by far, the busiest month, with 3,003 students (131 classes). The majority of these groups worked on the "Artifacts and Lifestyles" cultural resources packet provided by the refuge. During the summer months, we had 51 classes (700 students) involved in environmental education.

In the fall, the big rush starts again. The second week in September is set aside for Prairie Appreciation Week. This program teaches the students the importance of prairies, with both indoor and outdoor exercises.  
44-020-92-BW



Nearly 400 students were accommodated in the four-day program. Almost 3,000 students came to learn more about waterfowl migrations during the months of October and November. The groups worked on the "Birds in Migration" packet, and viewed the migrating waterfowl from the visitor center and other access points.



Eighteen college classes came to the refuge this year, including Dordt College, Hartford College, Teikyo-Westmar College, the University of Nebraska, Iowa State, Iowa Western Community College, Ohio State, Northeast Community College, the University of South Dakota, Luther College, and Hastings College.

Because of limited interpretive staff, we must depend on refuge volunteers to help with the education program. Volunteers are first assigned to new groups, and then to as many repeat-user groups as can be scheduled.



Outdoor Education - Fishing Clinics - In observance of National Fishing Week, over 50 Omaha boys and 30 adults from inner-city Omaha enjoyed a day of refuge fishing and boating on June 6th. 45-149-92-GG

This was a cooperative effort between the refuge staff, Special Agent Vaughn, and volunteers from Zion Baptist Church providing instruction and support services, Nebraska Game and Parks providing fishing equipment (40 poles) through their aquatic education program, and the Army Corps of Engineers, which loaned small motorized boats from their boater education program.

The youths received instruction in knot typing, casting (seen here), fish identification, and fish cleaning prior to proceeding to the lakeshore.

45-148-92-GG





Another fishing clinic was held on August 22nd for inner-city children from Omaha. Over 80 kids enjoyed a day of fishing on the refuge, cosponsored by the refuge, the FBI, and two church groups.

### 3. Outdoor Classrooms - Teachers

In June, the refuge was the site for nearby Dana College's Technology-Ecology Seminar, a high school science program for 80 outstanding elementary students from throughout Nebraska. A week earlier, the refuge was the site for a similar seminar for 50 "master teachers" enrolled in a Dana course.

### 4. Interpretive Foot Trails

The four refuge foot trails were used by over 28,000 visitors. Volunteers, Dorothy and Frank Hardy, did a third season of "trail patrol", picking up litter and pruning overhanging branches, plus restocking the Wood Duck Pond and Cottonwood Nature Trails with interpretive leaflets. The maintenance crew and four YCC youths also worked hard to keep the trails in good shape.

Guided tours of the trails were provided to 359 visitors. Volunteers provided the majority of these tours - mostly for conservation-oriented tour groups that called ahead for reservations.

### 5. Interpretive Tour Routes



The Auto Tour ran from October 15th through November 30th, a new beginning. It coincided with the fall migration, so it was convenient for visitors to park at the North Tower and turn around at this parking lot after viewing the waterfowl. 42-154-92-BW

In the past, the self-guided route followed the Center Island loop road and required one-way, counter-clockwise traffic. This year, the route turned around at the North Observation Tower and people returned on the same seven miles of paved road. The change was well accepted by the public, even though it meant they were now excluded from the unpaved (and dusty) part of the road that continues the loop around Center Island.



Cottonwood Picnic Ground was kept open, as was the Bertrand Excavation Site. A new Missouri River Overlook was built in the early fall to make this new auto tour route of maximum appeal. It worked! More than 60,000 people drove the tour route during the 45 days, more than double the number the previous year (25,800). The new route reduces law enforcement problems, reduces the amount of special signing which had previously been required, and minimizes traffic disturbance at the eagle roost, since it no longer passes nearby.

## 6. Interpretive Exhibits/Demonstrations

### a. Self-guided Exhibits

Visitation at the five-million-dollar DeSoto Visitor Center was 151,108, a 19 percent increase over the previous year, but still well below the 10-year average of 170,406. The early months of the year are fairly sparse in visitation. Spring use of the center picks up, and, of course, fall use is usually very heavy.

The month of November drew more than 39,000 people to the visitor center, approximately 25 percent of the year's total.  
43-122-92-BW



The orientation film, "Seeds of Change", is shown hourly during the week, and on the half-hour on weekends and during heavy use periods. A total of 30,852 people viewed this introductory film, in addition to all school groups. Other films shown were weekend wildlife films (3,510 viewers), Duck Stamp Story (574), and the Prairie Week film (135).

The DeSoto Visitor Center contains exhibits on cultural history, natural history, wildlife, conservation, and Service-oriented displays. Two galleries feature displays about the steamboat Bertrand, which sank in 1865, and the effects of westward expansion on the habitat and wildlife of the Missouri River Basin. There also are two lakeshore wildlife-viewing areas which are often filled to human capacity when the snow geese are present on the lake.



Some of the center's exhibits are now over a decade old. Here, Receptionist Martin points out some nasal abuse Teddy has sustained over the years.  
43-124-92-BW



The center's Federal Duck Stamp display was revised for 1992-1993. A wildflower photo book and "wildflower of the day" was placed at the Information Desk, spring through early fall. The book was updated periodically to include photographs of flowers currently in bloom. The multipurpose room was set up in the fall with taxidermy mounts of waterfowl, information on the flyways, and a waterfowl art display.

The 3-minute Bertrand Excavation video is housed in a video box in a "shipping crate" in the cargo gallery. The old 8mm-film system was of poor quality and caused numerous heating problems. The video replacement monitor and tapes generally work well in the "crate".

Binoculars are available to visitors for free use. This service is very popular with waterfowl and eagle observers. Damage to loaned binoculars is infrequent, but their age forced us to acquire five new binoculars this year, using Watchable Wildlife funding.

#### 1992 VISITOR CENTER EXHIBITS AND ACTIVITIES

January - December	FWS Duck Stamp Exhibit Module
March 1-31	Student Wildlife Art Exhibit
April 20-25	National Wildlife Week
	Suitcase for Survival Exhibit
May 23-27	Wildlife Photography Exhibit and Sale
July 1-31	Outdoor Writers of America Association Art Exhibit
September 12-20	Prairie Appreciation Week
October 3-31	Wildlife Art Exhibit and Sale
October 15-November 30	Wildlife Auto Tour
November 1-December 1	Birds in Migration Taxidermy Exhibit
December 1-30	FWS Volunteer Exhibit Module



The DeSoto Visitor Center houses a variety of excellent special exhibits. The first notable occurrence is the Student Art Show throughout the month of March. This year was the ninth annual showing. There were 403 entries from 34 participating Iowa and Nebraska schools (K-12) in the exhibit. Award ribbons were provided and all participants received a personalized certificate. Over 9,800 visitors enjoyed the exhibit in the center's multi-purpose room.

From May 23 to June 27, the center hosted the Ninth Annual Wildlife Photography Exhibit and Sale. The exhibit included more than 400 works by eleven Iowa and Nebraska photographers. A total of \$603 worth of local photography (28 matted and 4 framed photos) was sold, with 10 percent retained by the sponsoring Midwest Interpretive Association. This was a 33 percent increase in sales over the previous year.

During September 14th - 18th, Prairie Appreciation Week was held for students. A multi-purpose room exhibit of grasses and wildflowers was set up for environmental education purposes during the weekdays, and also was open to general visitors during the weekends. Volunteers went afield with the students to conduct prairie appreciation exercises. More than 400 students, primarily fourth graders, participated.



The Tenth Annual Wildlife Art Exhibit and Sale was held in October. Over 220 two- and three-dimensional works by 31 Iowa and Nebraska artists were displayed. 43-123-92-BW

Sales totalled over \$2,514, with the Midwest Interpretive Association retaining 10 percent. Volunteer artist/demonstrators were featured on weekends during the show, sharing their skill and personality with visitors. More than 19,000 visitors saw the show. Unfortunately, a sculpture of an eagle belonging to artist, Gene Dixon, was stolen, but this caused staff to review security for the exhibit. Gene accepted \$150 as compensation from the Midwest Interpretive Association.



- c. Bertrand Collection - The museum staff responded to over 50 research requests from federal, state, local, private, and public museums, colleges and individuals, including Parks Canada, the Smithsonian Institution, the National Park Service (NPS), state historical societies, various art museums, students, and scholars.

The computerization of the entire collection's inventory was completed and 85 percent of the collection (65,500 of 77,146 objects) was physically inventoried. The computer program was developed from dBase IV, and is compatible with the fields found in the National Park Service's Automated National Catalog System (ANCS).

Maintenance management dollars financed much of the museum program budget this fiscal year. Most of the expenditures outlined herein involved conservation of exhibited objects and relate directly to implementing the Bertrand Collection Comprehensive Collection Management Plan. A portion of the conservator's salary also was derived from that source.

The newly-hired conservator (December, 1991) initiated the conservation program and started up the lab, after a nine-year hiatus.  
M-879-JB



She developed safety documents and resource materials (Chemical Hygiene Plan, Lab Safety Plan, Disaster Preparedness Plan, MSDS updates, etc.), and ordered conservation chemicals and materials, including safety equipment. Other conservation achievements include: interventive conservation of 275 objects (for 1,225 hours of activity, the cost to the Service was just over \$15,000, as compared with between \$51,000 to \$70,000 for a private contractor). Hidden costs savings are left out of this figure. For instance, Service personnel time would be required to administrate the contracts, deliver objects, and supervise the work. In addition, a private contractor would be totally unfamiliar with the collection and require more information before beginning the work.



The new conservator also was responsible for the physical inventory and condition survey; over 85 percent of the collection.

Various equipment purchases were made to maintain professional museum management and conservation standards. Major items included computer software and hardware for environmental monitoring, lab safety equipment, (such as a fume arm and explosion-proof roof fan), HVAC and security/fire detection system maintenance equipment, a 35-mm camera and lenses for documentation of conservation treatments, an archival quality photocopying machine, and an another slide file cabinet. Several museum storage cabinets and a fire-proof filing cabinet were purchased to augment the present configuration of museum specimen cabinets in the Cargo Storage Area. Equipment was obtained to test the museum environment for any incidence of ammonia, hydrogen sulfides, and formaldehyde. Air quality was then tested over a one-week period, resulting in the documentation of the low-level incidence of the latter in the walk-in cooler from treatment of foodstuffs. Ammonia and hydrogen sulfides were not present in any significant amounts. The staff implemented a new, computer-generated system for monitoring temperature and humidity throughout collection storage and exhibit areas. This system provides powerful capabilities for analyzing environmental conditions throughout the building, and aids in developing passive conservation treatments for museum objects. The conservator also determined the explosive viability (none) of black powder now located in Cargo Storage (No previous data existed in catalog files, only institutional memory!).

A Memorandum of Understanding was executed with the National Park Service for the services of Harpers Ferry Center conservators to survey the collection.



Here, an NPS conservator makes recommendations about methods for object stabilization and treatment. Yes...Buffalo leggings. M-882-JB



Conservators Toby Raphael and Jane Merit (leather and textiles, respectively), each visited for four days and reviewed their respective discipline areas in the context of the collection. They conducted detailed condition surveys of selected textile and leather objects. Their reports addressed, among other things, how to proceed in the restoration of certain objects, the adequateness of the present museum environment, exhibit technique appropriateness, and connoisseurship information about certain objects. A bibliographic search of an international database also was conducted for information about conservation treatment of historic rubber artifacts.

The staff contracted with SMS Associates of Shepherdstown, West Virginia, for expertise in preparation of a Disaster Preparedness Modification Plan. Their report aided in the development of three separate contracts for exhibit furniture modifications to protect museum objects on display. Such is the state of the art. M-837-JB



The curatorial/conservation staff provided specialized tours or assistance to visiting scholars, museum professionals, and Service staffs. The refuge sponsored a Service-wide museum standards meeting at DeSoto under the direction of WO's Kevin Kilcullen during September. Tours were provided to professionals attending the Mountain Plains Museum Association convention and members of the American Quilters Study Group. A slide presentation about Bertrand Collection conservation activities was given to the Blair Rotary Club. An audio-visual slide presentation also was produced to introduce the Bertrand Collection to professional archeologists. The museum curator served on the Iowa Historic Resources Development Grant committee for museum projects. The staff also provided production assistance to Steve Stamp and daughter Niki for the ABC-syndicated program, "Video Max".



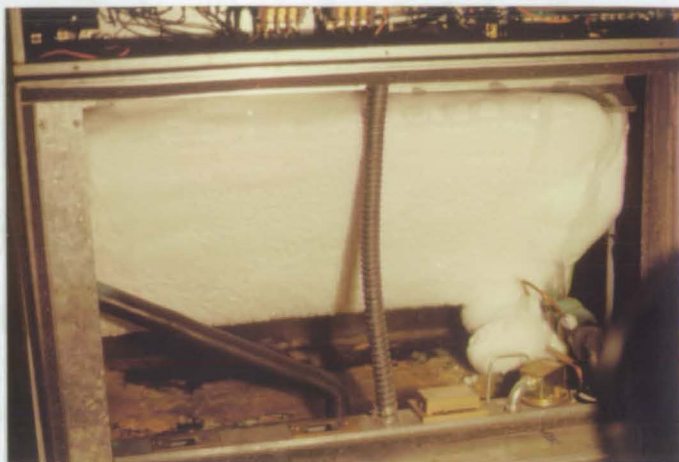
Staff attended various training courses. These included sending Curator O'Barr to two supervisory training courses, Conservator Harold to two museum conservation methods courses and the required "Introduction to USFWS", and Clerk-Typist Weldon to an administration methods update. Nellie Weldon was among those honored at a luncheon while in Minneapolis for her outstanding performance evaluation!

Staff developed written standards for internships. The curator consulted with four college/university professors about museum internships. One independent study in textile clothing research was completed by an Iowa State University student (ISU). A questionnaire developed during that study was sent to eighty museums and resulted in about twenty-five inquiries about the collection textiles. Three ISU student papers about the Bertrand Collection were presented at a regional meeting of the Costume Society of America, a national organization. One of these ISU graduate students continued her research and presented her paper about historic rubber slickers from the Bertrand Collection at the annual meeting of the Costume Society of America at Indianapolis, Indiana.

Through historical research, the curator obtained a first-person account of the Bertrand's sinking by one of the passengers, published in an obscure journal, and dated 1866, the year after the accident. He also developed a list of historic prices of goods sold in Montana that were represented in the Bertrand cargo from primary source materials obtained from the University of Montana archives.....some interesting data, which can be developed in future interpretations.

Collection storage and exhibits were maintained per collection management plans. The staff cleaned floors, exhibit furniture, storage equipment, windows, and museum objects. Sensitive objects were rotated on and off exhibit. The staff continued the maintenance of environmental monitoring and control equipment, and continued the Integrated Pest Management program within the collection.

On the building side of the coin, multiple security alarm incidents occurred during daytime hours, with the system in a bypass mode. The cause is unknown. Indications of slight fluctuations in electricity were noted, but the staff has not confirmed the causes to date. The visitor center fire extinguishers were documented as borderline safe and a requisition was cut for replacement or rebuilding. The Trane HVAC units were again heavily maintained.



Freon leaks were detected in the low-humidity chamber when the unit evaporator froze. A similar leak was treated later the same month, not something recommended for a museum environment. M-853-JH

Freon leaks alarm us because of the potential for their causing the Halon fire protection system to dump. The humidifier in the high-humidity chamber also malfunctioned. Overall, we are seeing the upcoming need for system replacements, after over a decade of faithful service. Rain and snow melt seeped through cracks in the center's roof over the Cargo Storage Area, a condition that will hopefully be addressed through upcoming Maintenance Management funding.

A fair amount of time went into refining data and photography for a new publication, The Bertrand Stores, which will be printed in the near future for sale to the visiting public. It features artifacts from the Bertrand Collection.

#### 7. Other Interpretive Programs

Fifteen professional business managers from the Peoples Republic of China visited in June, while seeking economic trade agreements in Iowa. 30-143-92-BW





The following week, fifteen high school girls from Japan followed. Neither group spoke English, which makes interpretation sort of tough.

The staff presented talks and programs to a variety of groups. Other than educational groups, a total of 94 organized groups and bus tours, containing 2,693 persons, visited the refuge. Orientation talks regarding the Service and refuge were provided, when staff were available. Slide programs, talks on endangered species, the refuge and wildlife management, and the Bertrand, were all subjects of numerous programs given to visiting groups by the staff and volunteers.

Weekend wildlife films were enjoyed by 3,510 visitors throughout the year. Many of the same local folks come each Saturday and Sunday to enjoy a film. A feature is now shown three times, both Saturday and Sundays. The series included a special program used during Prairie Appreciation Week, shown to 135 people. Films were discontinued during mid-October through November, during the waterfowl migration, on days of high public visitation, just to keep folks moving.

#### 8. Hunting

- a. Waterfowl - The Iowa southwest goose hunting season ran from October 10th through December 28th. From the start of the season through November 29th, Iowa shooting hours for geese ended at 1:00 p.m. From November 30th through December 28th, hunting hours were extended to sunset. The daily bag limit was seven geese, and could include no more than two Canada geese and two white-fronted geese. Nebraska permitted 10 snow geese to be taken.

DeSoto's controlled waterfowl hunt was held for the nineteenth consecutive year. The hunt ran from November 1st through December 11th, a total of 41 days. This hunt takes place on the Iowa portion of the refuge, between U. S. Highway 30 and DeSoto Lake. Ten cornstalk-covered blinds were wonderfully camouflaged. But, even though they blended in with the scene, the waterfowl seemed to be able to spot them immediately, and avoid them. Or, maybe, it was all that flak that rose to meet them as they approached.

A three-part hunt application card was again sent out to interested hunters. No money was required with the application. This saved a lot of staff time and effort. More refinement is required to streamline the application process; it still takes lots of time to administer the hunt and its related paperwork.

The advanced reservation drawing was held on October 5th. A total of 221 reservations were made, down from 339 last

year. The remaining dates were filled on a first-come, first-served basis. A total of 560 hunters used the blinds this year, 387 last year, and 591 the year before. All in all, it is not a cost-efficient hunt. It generated income of \$3,856, but it cost the station \$6,452. The hunters bagged a meager 92 geese and 17 ducks. Last year, they bagged 166 geese and 24 ducks. Ironically, we had plenty of geese this year. Probably a million passed through. During one week, there were 540,000 here at one time, but few immatures. Some hunters complain when they don't bag their limit, but others (like the majority of our fall visitors) are satisfied just to see thousands of birds take wing. Hunters shot 2,423 shells to bag 109 birds! The data speaks for itself. The cost and quality of this hunt has been questioned for some time. Despite our best attempts to educate the participant hunters, in the blinds and at the check station, they continue to sky bust at a high rate. The use of educational videotapes hasn't altered this behavior. This year, the number of shots fired per bird taken rose to an average of 22, an all-time high. Granted, snow goose productivity was extremely low and the potential for decoying immature birds very limited, leading to hunter frustration. But, this level of sky busting is unacceptable on a national wildlife refuge, and must be curtailed.

While the geese fed out widely throughout the valley and broke up into small flocks, there was considerable grumbling in the hunting community about experimental half-day hunts, and politics were weighing heavily against the Iowa state biologist's professionalism as the year closed.

- b. Muzzleloader Deer Hunt - A pre-hunting "scout" day was allowed on December 6th, with 77 hunters logging 195 hours.

One hundred permits were issued by the Nebraska Game and Parks Commission, and 98 hunters participated in the hunt on opening day. The hunt ran from December 12th through the 14th. Deer researcher Kurt VanCauteren took measurements as deer were taken from the refuge to assist with his graduate work at the University of Nebraska, Lincoln. Oddly, no trophy bucks were taken, the largest being only 176 pounds, dressed weight. The three-day muzzleloader hunt resulted in the harvesting of 46 deer; fewer than the 62 deer taken last year.

- c. Archery Deer Hunt - Archery deer hunting occurs on Nebraska and Iowa sections of the refuge during respective seasons, September through December. Seventeen deer were reported this year, versus 23 in 1991: only 4 in Iowa and 13 in Nebraska. Both areas have voluntary sign-ins, and data is sketchy.



## 9. Fishing

No ice fishing was allowed during the 1992 winter season. Ice conditions were not favorable due to warmer than normal winter temperatures.

On April 15th, the refuge's summer public use season opened, including the long-awaited fishing season. However, a cool, wet spring kept water temperatures lower than normal, and fishing success was delayed for several weeks. When it did pick up, largemouth bass and walleye were the more commonly sought-after prizes. With the cool summer weather, bass were observed frequently in the possession of those who knew where and how to catch them. Lots of large bass were removed by a few people. Northern Pike numbers were alarmingly low in the creel, compared to past years. Heavy ice fishing pressure in past years may have hurt this population. Few panfish were noticed during the season, except for an occasional stringer of crappies.

Seven official fishing tournaments were held during the fishing season. Success was mixed, with bass numbers fluctuating throughout the spring and summer. But, the local bass clubs still consider DeSoto Lake one of the better sites available within a couple hour's drive of the metropolitan area.



The fishing fever was fairly high during the first half of the season, and slowed during the warmer months of July and August. In total, we recorded 35,332 fishing visits, up from 30,899 last year. 40-002-92-MS

Special Agent Cleveland Vaughn, aided and abetted the refuge staff in sponsoring two summer fishing clinics for inner-city Omaha youths. (See Section H.2).

Overall, there is a public perception that DeSoto Lake may be a nice environment to fish in, but despite aggressive stocking, the actual catch is increasingly disappointing. Roughfish, like carp, buffalofish and bullheads are far too conspicuous in these waters.



The 11 fishing jetties received good use, when they weren't under water. A new handicapped-accessible pier is in the works.  
40-005-92-BW



#### 11. Wildlife Observation

Since DeSoto is within 25 miles of the Omaha-Council Bluffs Metropolitan area, there are many people attracted to the refuge's more natural habitats. Wildlife viewing from the visitor center is good in season, especially for waterfowl. The refuge also has a tower at the North Lake Observation Area. While heavily used, this tower is in poor shape, and plans are to replace it with a handicapped-accessible facility. The road remained open to the North Lake Observation Area throughout most of the year. There also is an old photoblind, which is available to the public upon special request.

More and more visitors are seeing turkeys today, while viewing the refuge deer herd has always been popular. A few pheasants are usually visible. Many local people drive out to the refuge toward the end of the day to simply drive through and see wildlife. There are even occasional observations of mink, beaver, and muskrats.

One of the most sought-after sightings is of a bald eagle. Thousands of people come to the refuge in the fall and winter to get a glimpse of one. The eagles cooperate quite well, and, in season, not many visitors leave unhappy. The new Missouri River Overlook increases the potential for viewing eagles in season.

#### 12. Other Wildlife/Wildland Oriented Recreation

- a. Nature Trails - Mild winter weather, increased visitor center use, and an extended auto tour period contributed to increased use. We have two trails that fit this category. The Missouri Meander Trail, adjacent to the visitor center, is the most used. This, no doubt, is a draw even for the non-handicapped. The other trail is at the Bertrand



Excavation Site, which continues to be popular. Both are looping trails, across relatively flat terrain.



Non-interpreted nature trails received more than 74,000 visits, a significant increase over the 39,000 reported last year.  
42-155-92-TR

- b. Mushroom Hunting - Mushroom hunting is permitted in approximately half the refuge, from April 15 through May 31. This is a popular activity, akin to blueberry or blackberry picking in other refuges. We recorded 10,832 visits this year, an increase over the 8,713 we had the year before. If you love morels come to DeSoto!
- c. Boating, Canoeing, Sailing - Less boating is recorded each year. Three dozen boats might use DeSoto Lake on good days, half that on other days. It reflects the public's difficult time in catching fish. The lake has a 5-mile-per-hour, "no wake" speed restriction, which discourages the fast boaters who used to race around our seven-mile-long lake.  
  
Canoeing and sailboating use are down, also. This is unfortunate because the lake has interesting diversity along its shore, which can provide an enjoyable day on the water. An Omaha sailboating group scheduled a regatta that was ironically canceled due to stormy weather, but they intend to return next year.
- d. Bicycling and Walking - Many people enjoy bicycling on the refuge roads, particularly people camping in the adjacent Wilson Island State Recreation Area. They carry their bikes along in their recreational vehicles. Walking is generally only along one of our four maintained trails; none of them over a mile long. Walking refuge roads is hazardous, although there may be opportunity someday to open certain maintenance roads for some longer hikes.



14. Picnicking

More than 100 picnic tables are placed throughout the refuge; 50 of these are located at the South Gate picnic ground. Most of the use occurs during the summer public use season, April 15 through September 30. The refuge accommodated over 30,000 picnickers, including family groups and school groups. The picnic tables at Cottonwood Nature Trail, especially used by school children on outings, were kept open through the fall auto-tour period. Two wheelchair-accessible picnic tables and pads were installed in 1992.

16. Non-Wildlife Oriented Recreation

Non-wildlife-oriented use is practically non-existent, except for the occasional business picnic, regatta, or walk-a-thon. A decade ago, it was normal to have 100,000 people a year, or 25 percent of our visitation, engaging in mass swimming and sun-bathing, water-skiing, and high-speed powerboating...and most seemed oblivious to the refuge's wildlife and its habitat requirements.

17. Law Enforcement

Poaching Case - In addition to the U. S. Magistrate Court fines imposed upon the five deer poachers for the Thanksgiving weekend, 1991, incident on DeSoto (\$1,000 fines, 3 years banishment from the refuge, plus loss of seized property), the following cases were later resolved in the Washington County Court: Tim Kelley - possession of marijuana - \$100; Mark Kuhr - possession more than 1 oz. - \$215.

No related state or county charges were levied. It had been suggested that the defendants might lose their hunting privileges for awhile. It didn't occur. Also, the county attorneys in Washington County, Nebraska, and Harrison County, Iowa, had been approached by the defendant's attorney, a past county attorney himself. A deal was struck. The county attorney's agreed to not further prosecute if the defendants plead in the U. S. Magistrate's Court under a plea-bargain arrangement. The defendants did, and the attorneys didn't.

However, one of the defendants, Mike Kelley, was observed throwing plastic bags full of something (maybe deer hides, etc.) off the Blair Bridge, into the Missouri River, on December 6th, during the midst of the investigation. A highly suspicious refuge manager also saw him driving away from the scene. So, Manager Gage ended up being subpoenaed in a separate littering case in Harrison County. And, Mr. Kelley paid another \$90.60. Whereupon, Manager Gage was asked by a local reporter if we (the Service) weren't "persecuting" the Kelleys. Whereupon, he replied, "No. We are

prosecuting them". This same defendant was back in trouble again this fall in another Iowa hunting incident.

Thefts - Vehicle break-ins had been occurring on the refuge for over a year, with essentially the same modus operandi.

48-077-92-JB



Because of a theft at the visitor center parking lot on February 25th, Manager Gage was alert to suspicious behavior as he travelled through the lot on Sunday, March 22nd. Sure enough, two vehicles were broken into as he watched, and the contents taken - rings, money, clothing, etc. Manager Gage followed as the suspect's vehicle went into Nebraska, where he was joined by Officer Jones. Through some miracle of communications, a Nebraska State Trooper got the message, and finally made the stop. Mr. John D. Johnson was taken into custody, and it was soon learned that he had a bad habit. After he got out on \$4,000 bail in Harrison County, he was taken in Dodge County, Nebraska, and while he was out on \$7,500 bail there, he pulled a similar act in Lancaster County, Nebraska, where he couldn't meet the \$13,500 bail. As the tale unraveled, it became known that he had been a former Creighton University basketball star, in fact, had been inducted into their Hall of Fame, and he had more recently been an Omaha Probation Officer. But, his habit lead to possibly \$100,000 worth of thefts, and, now, he's in prison. So, DeSoto doesn't have that problem at the moment.

On July 22, a 16-foot jon boat and a trailer belonging to a commercial fisherman were stolen. The boat was stolen at night, before closing hours. The thief had been stopped by a collateral duty officer twice that evening, but the officer did not realize that the theft was in progress. The next day, the boat and trailer reappeared on the refuge. Refuge officers found out that the thief had run out of gas twice after leaving the refuge, and had been given a ride into town to get gas. The thief had probably gotten scared of being caught, and decided to play it safe by returning the boat and trailer. To this day, the identity of the thief remains a mystery.



Other - There seemed to be a substantial increase in fishing violations this year. Violations were up from eight in 1991 to twenty-four in 1992. Most of these violations were for fishing without a license. See the summary on the following page.

With 47,000 people coming to see the fall migration, traffic control becomes necessary. This year, there were few problems, and, for the most part, traffic flowed smoothly. The geese cooperated by flocking near the North Observation Tower, generally relieving the visitor center parking lot of congestion. Traffic control was only required on two weekends in November.

Trespass remains a problem in some areas. Refuge "closed areas" are well signed, and identified in the refuge brochure. Our primary violators are mushroom hunters and snow goose watchers. Most mushroom hunters restrict themselves to open areas, but some seem to think that all the best hunting grounds are in the closed areas. As for the snow geese watchers, some enjoy spooking up the birds to see them take wing. And, trespass can be dangerous when goose watchers enter the controlled hunting area to get a better view. Not only does this anger the hunters, but it also increases the chance of someone getting shot. The hunting area also is well marked with signs.

While becoming familiar with local state hunting areas at the start of waterfowl season, Officer Reilly found something of interest. The refuge officer, while checking out the Tyson Bend Wildlife Management Area, ran into a group of bow hunters who claimed to have found a marijuana garden. The refuge officer then called the Harrison County Sheriff's Department to report the sighting. A deputy arrived and, with the help of the refuge officer, found the site. Only one plant was still standing, but a total of ten buckets with potting soil and fertilizer were found. Refuge officers also removed a total of 186,000 wild marijuana plants from refuge public use areas throughout the summer, always an attractive nuisance.

Roadblocks were used a few times to enforce the entry permit system. Eleven warnings were given. Officers found that 80 percent of the visitors were in compliance. Those who are just passing through the refuge to get to Wilson Island State Recreation Area fail to realize that they must pay the fee, even if they are just driving over our five miles of access road.

Officers responded to eight after-hour alarms at the visitor center. All were caused by storms or electric fluctuations.

Officer Reilly was assigned to Special Agents' Vaughn and Vendel in Nebraska and Kansas during the fall waterfowl season for a couple weekends of familiarity with ducks and duck-cop procedures.

Summary of Violations - 1992

Types of Violations	Warning Tickets Issued	Prosecuted Violations	Total Court Fines	Cases Pending	Cases Dismissed
Hunting Lead Shot Unplugged Gun No Federal Stamp Other	2	1 1 1	\$50 \$50 \$60	2	
Fishing No License More than 2 lines License not in possession	6	8	\$800	9 1	
Trespassing After Hours Closed Area	2	2 9	\$100 \$450	3	
Other Destruction of Government Property					1
Boating Floatation No Wake Abandon Property	1 1	1	\$ 25		
Other	22	2	\$ 75		
Totals	34	25	\$1,610	15	1





A careless visitor drove through a refuge gate on October 24th. The visitor thought he was on his way to Wilson Island State Recreation Area, with his boat in tow.  
48-030-92-BW

He had failed to pick up the fall auto tour brochure, as well as to pay attention to the road. There was minimal damage to the gate. The visitor's front headlight and the hood of his Cadillac was damaged. This lawyer was cited, but his case was dismissed by the U. S. Attorney's Office, because he was considered "a friend of the court".

#### 18. Cooperating Association

The Midwest Interpretive Association (MIA) has completed its eleventh year of operation at DeSoto. Revenue received from the sale of books, artwork, photographs, t-shirts, postcards, and posters at DeSoto totalled only \$47,590. This followed a slow period in 1991 because of low visitation and bad weather. In order to rebuild its inventory and reshelve stock, the Association has applied for a \$10,000 loan from the National Fish and Wildlife Foundation.

Bruce Barkley is the MIA's full-time Business Manager, a non-government employee. Along with DeSoto, which serves as its headquarters, the Association also administered outlets at Mingo, Crab Orchard, Squaw Creek, Swan Lake, has had a five-month, seasonal operation at Tamarac NWR and, more recently, at the Lewis and Clark Lake visitor center, which is a facility of the U. S. Army Corps of Engineers, near Yankton, South Dakota. At the end of the fiscal year, Crab Orchard and Tamarac decided to start their own associations.

New items that were added to the DeSoto sales area include new designs for snow goose t-shirts, bald eagle and snow goose coffee mugs, and a refuge ball cap.

Direct monetary contributions to the refuge totalled \$917.03. This included sponsoring both photography and wildlife art shows, fishing clinics, printing waterfowl hunt reservation forms, and



purchasing books for the refuge library, plus a luncheon or two. The Business Manager also participates in DeSoto's operational programs in a variety of ways, and contributes to refuge interpretive programs, in person and through his computer skills.

Several donations were received from individuals in memory of loved ones. These donations will be targeted for future publications.

A breakdown of MIA sales activities during the year follows:

Outlet	Gross Sales	Percent of Assn. Sales	Monetary Contributions Rendered
DeSoto	\$47,590.76	58.8	\$917.03
Mingo	7,370.85	9.1	0
Tamarac	4,346.96	5.4	885.42
Crab Orchard	1,099.73	1.3	0
Squaw Creek	10,647.01	13.2	600.00
Swan Lake	2,751.55	3.4	0
Lewis and Clark	7,074.55	8.8	0
Total	\$80,881.36	100.0	\$2,402.45

# I. EQUIPMENT AND FACILITIES

## 1. New Construction

During 1992, the decision was finally made to replace the headquarters building due to settling of floors, which resulted in cracking and separating walls.

35-172-92-MS





These cracks and shifting resulted in separation of conduit supporting electrical service and potential breakage of water pipes. The building had become unsafe for occupation. Following a visit by Deputy Director Dick Smith on June 4, the Regional Office found emergency funds, declared the building "condemned", and directed our removal as soon as possible.



Consequently, a trailer was rented for a temporary headquarters, the various utility lines run in, and the process of moving began in early fall. The full administrative move was completed in November. 35-171-92-RP

Relocation and setup to this trailer resulted in expenses totalling \$8,858.33 for items, such as electrical, water, sewer, security locks, telephones and carpet installation. The double-wide is habitable, but crowded and noisy. We will be there (here) quite awhile.

Plans moved forward to relocate the headquarters water plant in the west end of the eight-stall garage. An architectural firm, TKDA, Inc. of St. Paul, began designing the new headquarter's complex, with safety and energy efficiency in mind. The old building will be replaced with two separate facilities, an administration building and a two-stall shop of approximately the same size, essentially in the same footprint. The cost is estimated to be under \$500,000.

A new Missouri Overlook was developed as part of the revamped auto tour route. It is designed as a one-way, drive-through overlook, with a half-dozen parking spaces and a bus pull-off. It will provide excellent opportunities for viewing waterfowl and bald eagles during migrational periods, and a good view of river-oriented recreational use throughout the summer. The gravel used for this site was purchased using \$3,744 of add-on funds provided by the Regional Office. Future river and wetland interpretive panels are planned.



The new Missouri River Overlook was force-account designed and constructed during September and October. This overlook is located along the Missouri River, across the road from the Inlet.  
31-091-92-BW



In May, pads were poured and picnic tables installed for handicapped-accessible picnicking at the South Gate Facilities and Cottonwood Nature Trail. 46-31-92-BW

The tables, purchased in 1991 for \$700, were secured to the pads and signs placed, indicating they are for handicapped use.

Construction of a new boat ramp and handicapped accessible dock began this year with the purchase of piling, cedar lumber, and contractual installation of piling for \$2,750, \$1,470, and \$1,588, respectively.  
31-92-92-MS





The piling were installed in June, and completion is scheduled for the winter of 1992-93, when refuge personnel can work from the ice. The ramp and docks are replacements for two small boat ramps removed in late spring. Their condition had deteriorated to such an extreme that rehabilitation was impossible.

## 2. Rehabilitation

Approximately 9 miles of refuge roads were skip-striped by Diamond Vogel Paint from Omaha for a cost of \$1,020. In addition, \$1,125 went to Striping Services to fill the ever-increasing cracks that occur on our paved roads. In an attempt to reduce deterioration along the auto tour route, Delta Asphalt from Council Bluffs was awarded \$22,000 of Maintenance Management funds to double-chip-and-seal approximately two miles of refuge road, between the Bertrand Turn-off and the North Tower.

Extreme deterioration of our fishing jetties has caused a safety hazard for fishermen, and, in some cases, has resulted in some jetties being completely under water during uncontrollable high spring and summer lake levels.



Consequently, 320-ton of type-B rip-rap was purchased for \$2,880, and placed on six jetties to raise them to desired levels.  
31-098-92-DR

Subsequently, 231 tons of class-A stone, (purchased with 1991 monies) was spread over the top to smooth out the rough surface left by the rip rap.

The end result was five finished jetties, and one partially finished jetty. The remainder will be need to be closed, due to the unsafe walking surfaces, if stone placement isn't completed prior to this upcoming public use season.



A small one-way loop road at the South Gate Recreational Facility was removed in April. 31-095-92-SVR



This loop had caused numerous problems, with people entering the wrong way, and with boat trailers hitting the barrier posts when turning in either direction. Consequently, the adjacent roadway was opened for two-way traffic, unnecessary barrier posts removed, and 75 linear yards of asphalt loop road were replaced with topsoil, and seeded to Kentucky fescue and perennial ryegrass.

The aforementioned deterioration of the headquarters building and planned construction of a new building resulted in an expenditure of \$6,032 spent for contaminant testing beneath the shop floor. The existing hoist had been leaking hydraulic fluid underground for some time, and the testing was necessary to determine if it resulted in ground and/or groundwater contamination. No significant contamination was found.

### 3. Major Maintenance

Again, the old military 6x6 fire truck required replacement of an engine head and gaskets. This vehicle continues to limp along, and has broken down six times during the fire season over the last three years....not too safe a situation.

The air compressor motor in the maintenance shop was replaced at a cost of \$427. The Trane HVAC systems at the visitor center required repeated repairs as noted on page 67.

The South Beach comfort station's conversion to handicapped-accessibility was finally completed in April. This involved the installation of new doors, panels, raising flush valves and toilets, and placement of handrails.

Fifteen special use permits were issued early in the year to remove dead cottonwood trees from public use areas. However, very little wood was actually removed because the permittees were only allowed to take the downed trees when the ground was frozen - a



condition which rarely existed with the extremely mild winter weather. Dying and blowdown cottonwoods are a constant maintenance headache in picnic areas, along roads, and field borders.



Woody vegetation invasion is an ongoing problem in roadside ditches. While the staff has tried to limit mowing to a minimum, all roadsides in the main public use area had to be mowed in 1992 to control rough growth.  
31-075-92-BN

#### 4. Equipment Utilization and Replacement

A new Jeep Cherokee and a one-and-one-half-ton 4X4, 11,500 GVW dual-wheel flatbed truck were ordered for \$13,000 and \$15,000, respectively. The flatbed will eventually be mounted with a 300-gallon pumper for fire use, replacing the old 6x6.

A new Ford Taurus was received (ordered with 91 monies), and resulted in excess removal of a 1978 Plymouth Volare for \$530. A 1982 Chevy patrol truck with 152,000 miles brought in \$675. In addition, an excess 1987 Jeep Cherokee and a 1985 Chevrolet Blazer were transferred to the station. These vehicles, specifically targeted for law enforcement and private land use, were transferred from Special Agents. They are high-milers, but in good condition. A new clutch was required in the John Deere 2440, an unplanned expense of nearly \$1,200. Less expensive repairs were required on the station's road grader and backhoe, also.

Several new items were purchased for the visitor center museum laboratory. These are addressed in Section H.6.c. A new copy machine also was purchased for use at the visitor center at a cost of \$3,980, replacing the 14-year-old Xerox machine.

The transition of law enforcement officer weapons from Smith and Wesson Model 66's to the new Model 4046's cost the station \$1,076 for two new pistols. In addition, the aged Remington shotguns were replaced with two new model 870's for \$533.

Three new weed whips were purchased for \$745, to replace some predominantly non-functional models obtained during the YACC-era.

Four more pairs of binoculars were purchased for use by law enforcement and visitor center personnel at a cost of \$445.

5. Communications Systems

Telephones - Conversion to FTS 2000 has resulted in better and cheaper telephone communications. The only problem that we have had with this system is that, when we do have technical problems, the finger pointing starts. Unless you are able to get U. S. West, ATT, and our own FTS network people together, little gets accomplished. We were, and are, plagued with an intermittent "buzz" on one of the three FTS circuits. Repeated calls to all parties mentioned above have, to date, proven fruitless. We are assured that the problem is not with our telephone equipment, the local company lines, or the FTS lines. Since there is nothing else, we have to assume "gremlins" are involved.

6. Computer Systems

At the end of the fiscal year, the Regional Office purchased a fair number of computers. We were lucky enough to receive one. The new computer, manufactured by Dell, is as near the edge of technology as we will probably see for some time. It has a 486 processor and a speed of 33mhz, a 170-MB hard-drive, Super VGA, and a tape back-up system. All we have buy is the software. Many thanks to the Regional Office for their support of this technology at field stations.

J. OTHER ITEMS

1. Cooperative Programs

Missouri Chutes Partnership - Last year, in our Annual Narrative Report, we introduced a new partnership program with a variety of other offices, agencies, and entities to restore wetlands along a 137-mile segment of the Missouri River, between Sioux City, Iowa, and Omaha, Nebraska. Manager Gage participated in a working group to inventory wetlands and to develop restoration priorities, over and above those included among the U. S. Army Corps of Engineers mitigation priorities. The team is lead by Region 6's Land Acquisition Chief, Harvey Wittmier, and includes both Iowa and Nebraska state conservation representatives and an Omaha tribal representative. The group has worked closely with the Papio-Natural Resource District in Nebraska, because they have similar goals under their Missouri River Corridor Project. Our primary focus last year was the Boyer Chute project near Omaha. This year's emphasis has been the Blackbird Bend area, further upriver near Decatur and Onawa. A draft concept plan evolved during the year as the group focused in on a 9 to 12 mile stretch of former Missouri River oxbows and chutes, which includes state lands,



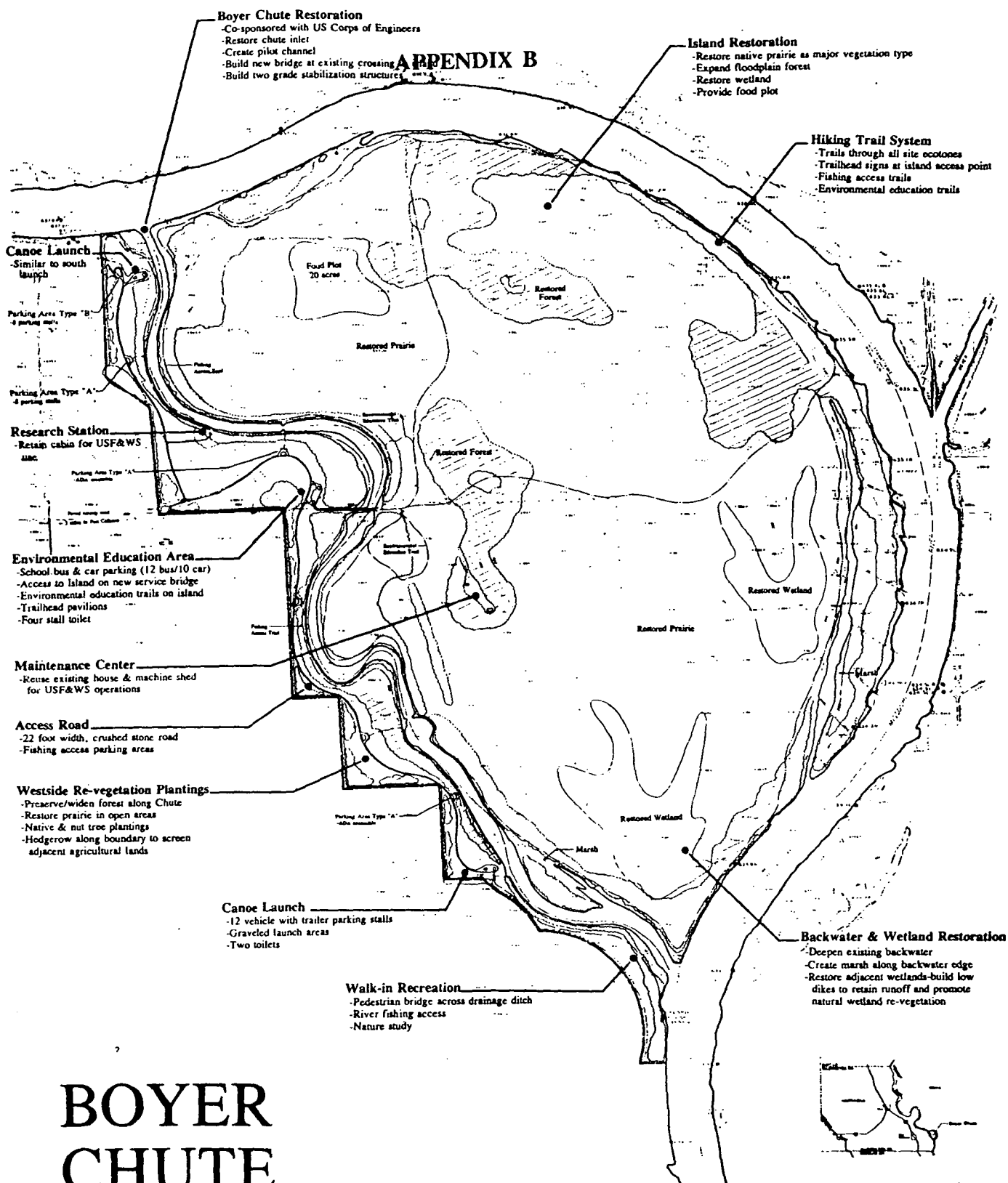
federal lands, private lands, and Indian lands. In all, 8,000-12,000 acres on the Iowa side of the river could be encompassed under partnership agreements for management by the Service as the Blackbird Bend National Wildlife Refuge. However, before formal agreements are drawn, the Service will complete an engineering feasibility study to determine whether sufficient hydraulic effect exists for effective chute restoration. This section of river has suffered extensive degradation. It once sustained a great fishery, and was a major flyway for ducks and Canada geese. Little remains, due to channelization and siltation during floods.

Boyer Chute - The first of the potential acquisitions under the Missouri Chutes program actually began last year at Boyer Chute, just downriver from DeSoto on the Nebraska side. The last two tracts of the 2,000-acre bend were acquired this year by the Papio-Missouri River Natural Resource District (NRD). Manager Gage was involved in initial planning with the District and the U. S. Army Corps of Engineers regarding phase-out of farming activities, design and capacities of a 121-foot bridge to be built by the Corps, initial grass and tree plantings, etc. The contract for the access bridge and clearing of the old chute, and draglining of a pilot channel were begun this fall. The Corps must complete their portion of this chute renovation demonstration project, establish grade structures, etc. before the river is brought back up to navigation level in April. Up to 3,000 cfs of the river flowage will be diverted through the chute.

For their part, the NRD completed acquisition, surveyed and erected a boundary fence along the upland edge, and inter-seeded roughly 60 acres of warm-season grasses into soybean fields.

Planning proceeded at a rapid rate and an open house was provided for the public in Fort Calhoun in January. In March, Manager Gage participated in a planning meeting with Region 6 personnel at the Papio-Missouri River Natural Resource District headquarters. The extent of public facilities and agency responsibilities were successfully negotiated at this meeting. Land Acquisition Chief Wittmier is a tough negotiator, and the Service got almost exactly what it wanted. One exception was a concession on the Service's part to allow future bicycle traffic on the mile of looping concrete trail within the interior of the "island". It must be remembered that this will be a heavily used site, essentially an urban refuge. The map on the following page will give you some idea of the envisioned facilities.

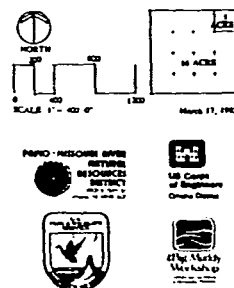
The Memorandum of Understanding between the Service and the NRD was signed by summer, the published environmental assessment was released in July, and the Decision Document on Boyer Chute National Wildlife Refuge was released in August. The Service has agreed to assume operational responsibility upon transfer in fee title in 1995.



# BOYER CHUTE MASTER PLAN

A Missouri River  
Corridor Project

Figure 4. The Natural  
Resource District's Master  
Plan for the Boyer Chute  
Area.





So, what will the Service have when Boyer Chute opens to public use in 1996? The cost of acquisition, plantings, restoring the chute, the bridge, grade structures, and the recreational facilities will total over \$6 million. These costs will all be absorbed by the Army Corps of Engineers and the NRD. It will come into the Service's hands with roads, parking areas, concrete trails, canoe launches, handicapped-fishing piers, picnic facilities, environmental education shelters, and restrooms. The Service's early commitments will include reversion of farmlands, restoration of wetlands and development of moist-soil units, establishment of primitive interior trails, etc. Such a deal!

HGM Associates, Inc. of Omaha has been selected by the NRD to design the public use facilities, for which the Service will have oversight authority.

Fort Calhoun Nuclear Plant - Manager's Gage, Root and the resident officers at DeSoto had a rather rude awakening at 1:53 a.m. on the morning of the 4th of July. Civil Defense coordinators reported a "Standby Alert" at the Fort Calhoun Nuclear Power Plant, only two miles southwest (upwind in July) from the refuge headquarters. A reactor bypass valve had failed and over 20,000 gallons of contaminated water had spilled on the floor of the containment building, shutting down the hot reactor. The status dropped to a Level 4, "Unusual Event", by 6:30 a.m.... much to everyone's relief. The plant was operational again by month's end. The refuge regularly participates in simulated exercises with the plant, but this was the first actual alert in the plant's 19 years of operation.

Alternative Facilities - For a clue as to why DeSoto's public use is declining, it should be mentioned that new recreational areas keep opening in the Omaha community. The new Mahoney State Park just across the Platte River has its own Interstate exit. It drew 1.8 million people this year. And, the 243-acre Zorinsky Lake, a Natural Resource District facility, opened in west Omaha. It has sustained heavy fishing pressure in its first season, a free-use facility.

Cargill's Coming - Washington County, Nebraska, has been vying for additional industry for several years, and after losing out on attracting a couple major manufacturing companies, finally provided sufficient tax incentives to Cargill, Inc. so that a large plant is planned along the river on the southeast side of Blair. This 200-million-dollar grain processing plant will result in heavy traffic over U. S. Highway 30, another 150 jobs, and increased commerce for the community.

## 2. Other Economic Uses

A special use permit has been issued to Valdemars Deklavs from Blair for years to keep 25-50 bee hives on the refuge in three

apiaries. The annual fee of fifteen dollars takes care of our administration, and the bees provide us a valuable service.

The continued die-off of refuge cottonwood trees has resulted in large limbs littering picnic areas, roadsides, and, sometimes, blocking the roads entirely. During the winter months, free permits were issued to fifteen individuals who wanted to haul this wood for firewood.

Free Special Use Permits were issued to commercial fishermen this year to remove roughfish from DeSoto Lake. See Section G.11.

### 3. Items of Interest

Congressional Contacts - Our only direct Congressional contact was with Congressman Neal Smith (D), Iowa, who passed through the visitor center on February 9th. Congressman Smith's redistricted zone of influence now includes both DeSoto and Walnut Creek Refuges, as of January, 1993.

VIP's - We are proud to say we had our share. Assistant Secretary Mike Hayden toured the refuge with NPS personnel from the Omaha Regional Office on March 16th. He was quite impressed with the visitor center and the diversity of our programs.

Then, we were graced by Assistant Director Dick Smith's presence on June 4th, during his junket through the Midwest with our new Assistant Regional Director for Refuges, Sue Haseltine. 30-141-92-BW



Here, he was "brainwashed" (his comment) into accepting integrated pest management as something more than a term. Hannibal Bolton was here to assist with a fishing clinic in celebration of National Fishing Week. The tie? Maybe, he was trying to impress Manager Gage. We don't know.





The refuge again played host to Assistant Secretary Hayden, NPS Midwest Regional Director Castleberry, and Deputy Regional Director Moriarty, among others, on November 12th.

30-142-92-JB

Governor Hayden returned to the refuge to present NPS WELP participant Carol Kohan with a NPS Fast-Track monetary award for her effort in developing an NPS security survey program. Carol was with us for 60 days as a Management Assistant.  
30-143-92-BW



Other VIP's during the month of November included NPS's Associate Director for Natural Resources Hester; Missouri Conservation Director Presley; Refuge's Chief Schallenberger, WO's Ed Loth, and two tough old retired Special Agents - Bozak and Stiles, a tough act to follow!

#### 4. Credits

All managers, and selected administrative personnel wrote segments of this narrative. All compilation and computerization was finalized by Administrative Technician Wanda Harbottle. Project Leader George Gage edited the final report. Credits for photos are shown in individual captions.

K. FEEDBACK1. Barriers

The Service hasn't had much luck in hiring and holding minorities. I recently heard a noted "futurist" state that 56 percent of the new hires in the 1990's will be minorities. We lost our minority Cooperative Education student this year to the Oakland Police Department. We had a considerable investment in time and effort, but couldn't maintain his interest in the biological sciences. So, we tried again, this time with a seasonal hire. Where do you find minorities in the Midwest? Mostly, in the cities. They have not had the life experiences which prepare them for working out afieled on a refuge. So, before we put these young people to work, we sent them off to the Career Awareness Institute for at least an introduction to the Service.

Our latest recruit was an intelligent, outgoing young man. Typical urban youth. Had never hunted or fished. Had never handled a gun. Didn't know about stringing nettles or poison ivy. We had to provide him with a lot of coaching.

And, therein lies the problem with hiring urban minority youths. They simply do not possess the necessary life experiences, work ethic, etc. which our incumbents have traditionally had. Sure, we taught these youths how to drive a vehicle with a standard transmission, how to keep the rpm up on a mower, how to handle a paint brush, and we hounded them until they got to work on time. But, all the coaching in the world isn't going to instill in today's youth the drive to excel in a socially and ethnically foreign environment. Urban youths have typically grown up with Nintendo and MTV, not with farm animals or a bird guide in their hands. They are just not interested in pursuing a career in conservation or the Great Outdoors.

Race is definitely a barrier. Minority recruitment is especially tough. But, what I'm trying to suggest is that we need to take our recruitment efforts even a step further, and pursue minority recruitment in Rural America. Otherwise, culture, home environment, work ethics, and a lack of associated life experiences create additional barriers, which are just too tough to overcome.

2. Real Money

As this narrative is written, we are nearly halfway through Fiscal Year 1993. It is fairly obvious, from all the training announcements being circulated and all the seemingly extraneous travel and training we read about others being involved in, that realization hasn't hit home in some niches of the Service, but out here in the Midlands, refuges are really hurting for funds. As a field manager of 25 years, I can honestly say I have never seen



the funding picture look this bleak. The funding was pretty bad in the early 1970's, but it appears that there is no way the Service can continue to staff and operate existing refuges, start up new refuges, and fund all these initiatives without a real money increase. Fixed costs are fixed costs. Salary and benefit increases are only part of the problem. Required training, mandatory certifications, physicals, testing costs, and, now, even background checks, are like small cancers where our wallets lie. Sure, there still are a few pocketfuls of money doled out from favored coffers for Watchable Wildlife or whatever. But, that's not real money. We need another major funding initiative... another Bicentennial Land Heritage Program (BLHP), only bigger.

Look around! Our vehicle fleets are aging, our equipment is BLHP-old. Our roads, trails, and facilities are deteriorating. We are now using the Maintenance Management System as a quick fix. We are forced to dip into approved projects for salaries. In DeSoto's instance, our asphalt roads are breaking up because we have not had sufficient cyclical funds to provide the preventative maintenance they require. One of the finest visitor centers in the Service has water buckets on the floors in the public areas, because the roof is leaking. And, we are understaffed for the varied public services we provide. Who supposedly isn't?

The Service needs a very serious increase in both operational and Maintenance Management funding.

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